MARCH, 1954

Products Finishing

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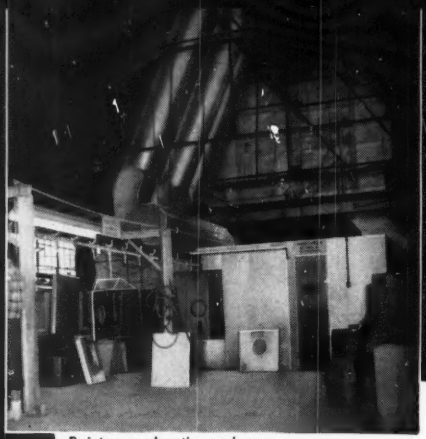
space-saving Cincinnati FINISHING SYSTEM

handles both prime and finish operations

...at Caloric Stove Corporation



Paint spray booths; and overhead air make-up system.

Saving floor space is a valuable asset to Caloric as to all major manufacturers. Cincinnati engineers designed a complete finishing system with this need uppermost in their minds.

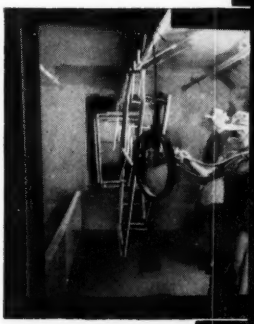
The operation begins with a 5-stage washer capable of handling Caloric's present production and yet with the capacity of doubling the output whenever it becomes necessary.

The second unit consists of a 400° gas-fired recirculating air dry-off system to dry the work completely after phosphatizing.

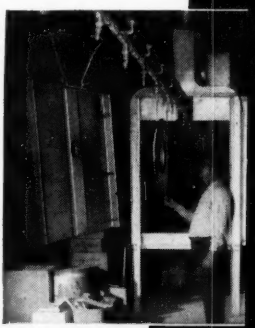
Third, the work passes through a huge combined air makeup and pressurized room consisting of two large spraying areas. Either prime or finish coats may be applied while the work is carried on a 1054 foot conveyor designed to carry the work continuously through the entire operation.

The material is then elevated up through a 500° floor supported oven leaving a working area underneath with a 9 foot clearance for parts storage and assembly operations. This unit is also a gas fired recirculating design having 300 feet of conveyor inside the oven permitting a full half hour of baking time at 500°.

A complete, properly designed finishing system can give *you* increased production at lower costs, more uniform results and greatly reduced handling costs . . . save you space at the same time. Consult Cincinnati . . . for a complete finishing system or any part, engineered-fabricated—installed . . . to your complete satisfaction.



Prime coat spray application.



Parts emerge from dry-off, prior to painting.

OPERATIONS

1. *Cleaning & Phosphatizing*
2. *Pre-Paint Drying Oven*
3. *Air Makeup and Paint Spray Booth*
4. *Paint Bake Oven*
5. *Completely Conveyorized*

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2 Stripping paint (solvent or hot tank)

3 Machining, grinding, forming

4 Deoxidizing aluminum

5 Steam cleaning aluminum and steel

6 Deflocculating paint in spray booths

7 Preparing metal for painting

8 Removing scale and corrosion

9 Preventing corrosion

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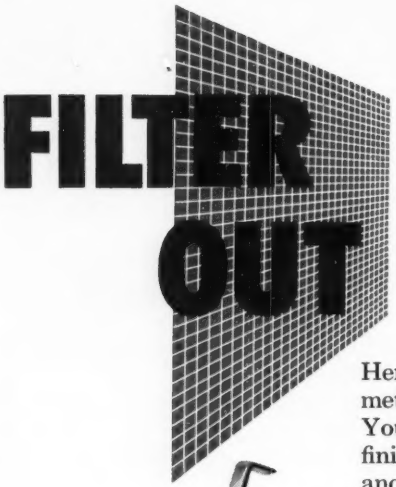

anode metal losses!

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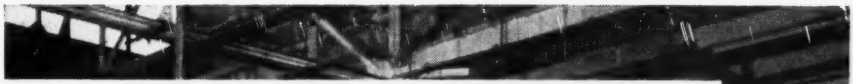
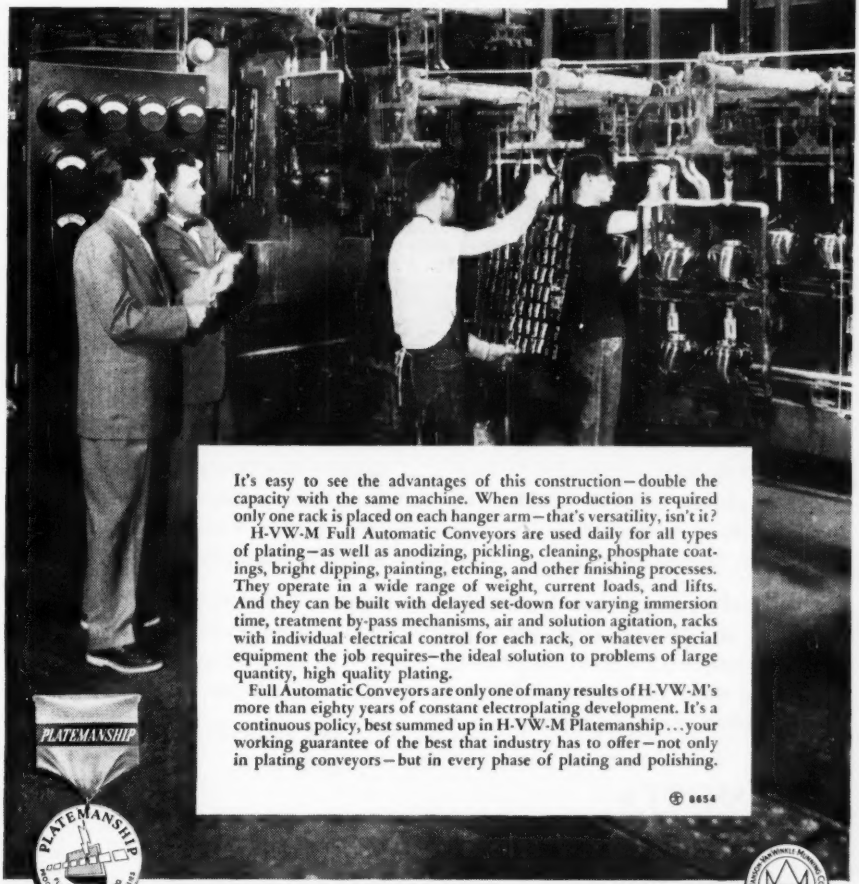


...and here is the double file loading feature of H-VW-M Full Automatic Conveyors



It's easy to see the advantages of this construction—double the capacity with the same machine. When less production is required only one rack is placed on each hanger arm—that's versatility, isn't it?

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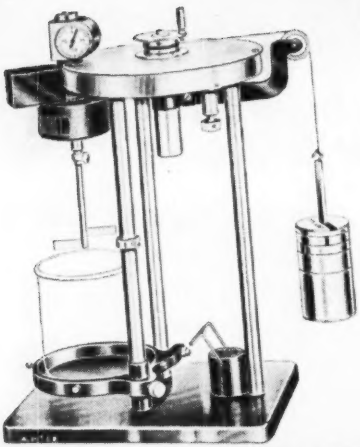

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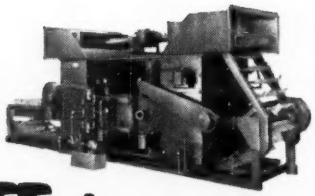

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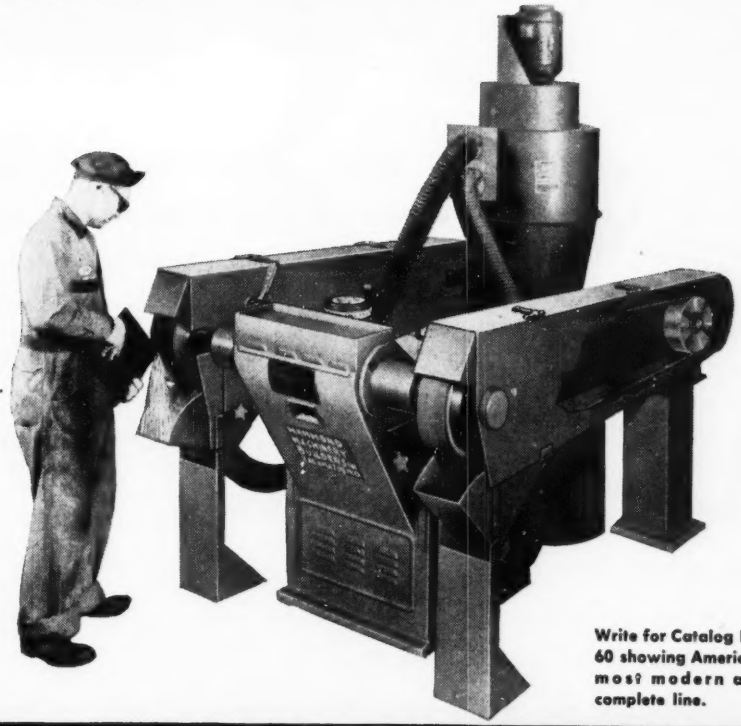

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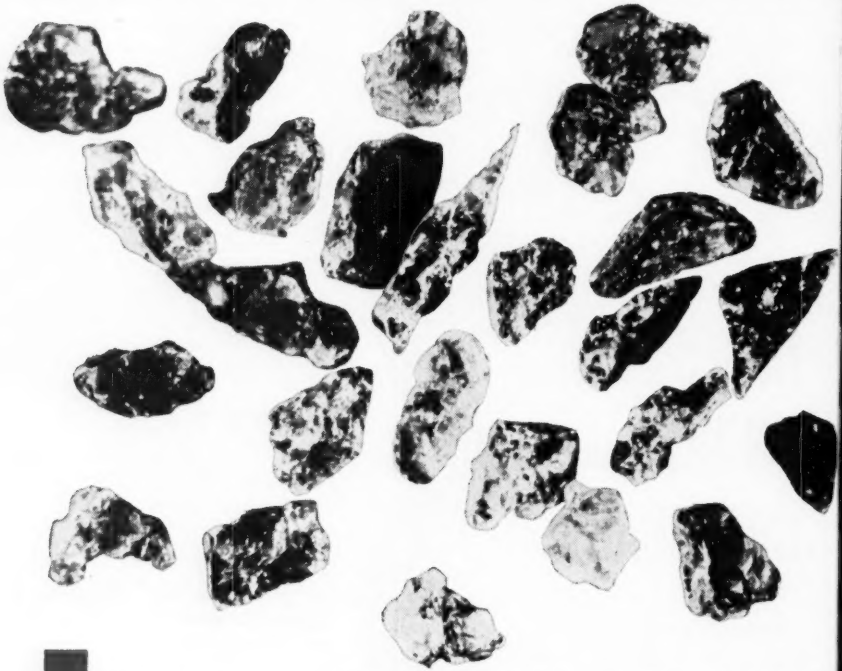

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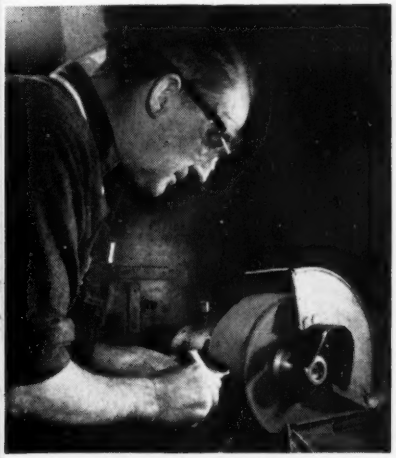

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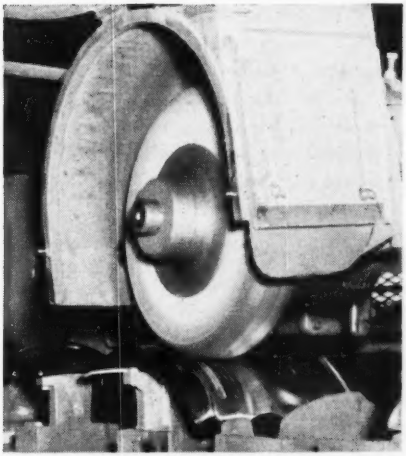

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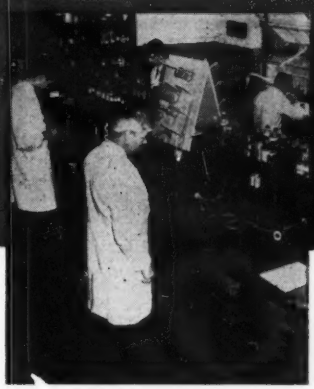

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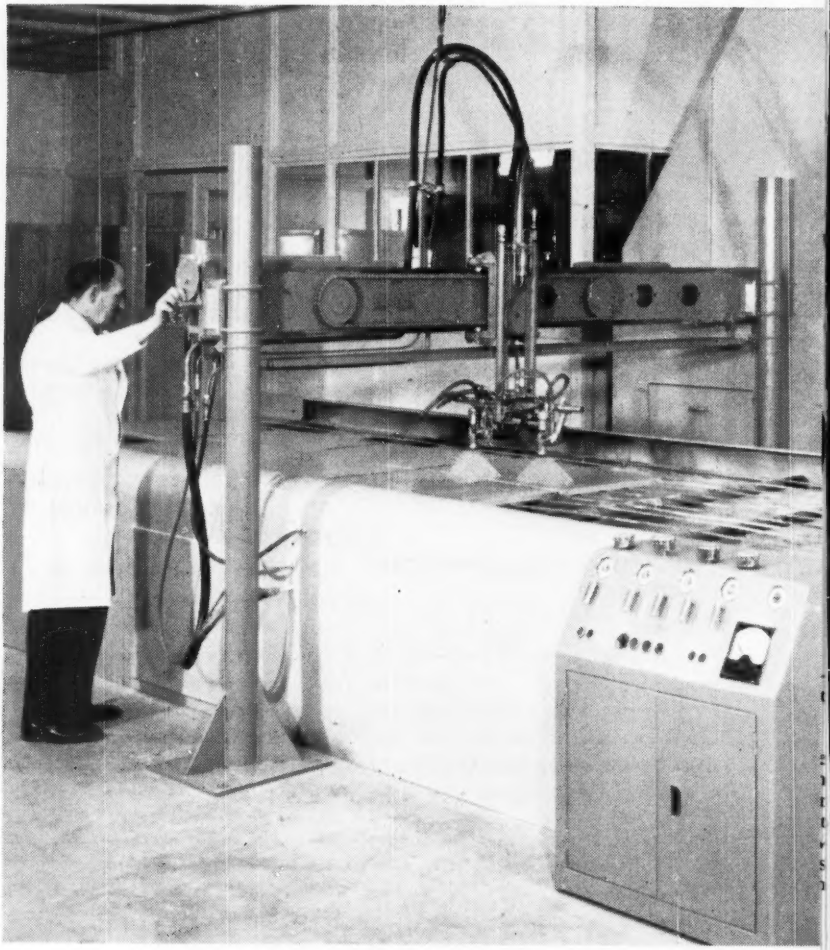

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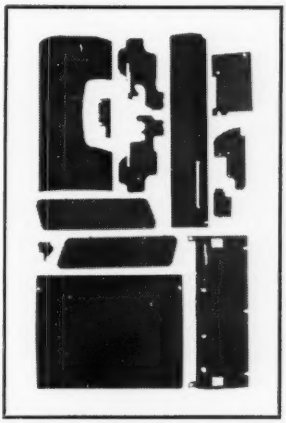

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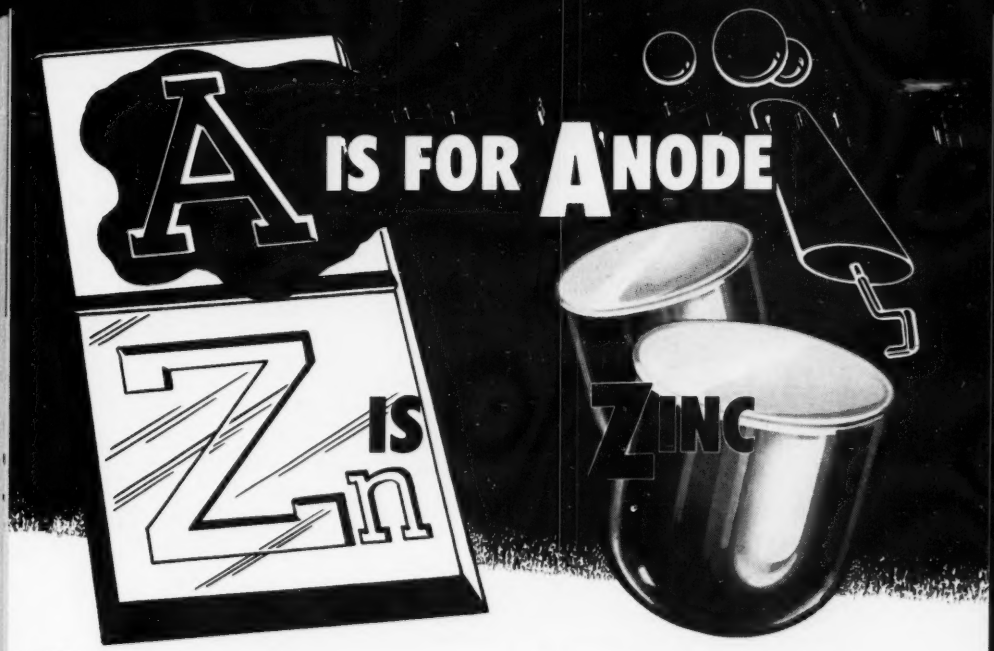

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The decorator Press is a precision built machine incorporating many features of design and operation that are found on the regular line of General presses for screen process printing on paper. Register is extremely accurate and can be adjusted while the press is running. Sharp printing is obtained by line contact impression and positive color control.

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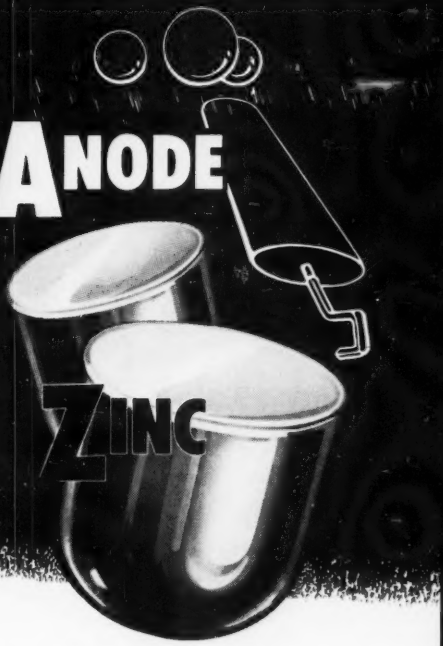
A IS FOR ANODE

Z IS Zn

ZINC



Zn has been the accepted symbol for zinc for hundreds of years. The name Wagner has come to mean "Plating anodes, materials, equipment" within a short period of 15 years. But "FLAT-TOP" has become synonymous with "Anode" in the brief years since we introduced you to the original Flat-Top Zinc Anode in 1948. It has been so universally accepted as *the standard,* that Flat-Top has been imitated, copied, burglarized — but not *duplicated.* For there is something more to Flat-Top than just a different shape, important as that shape may be. The big difference is in the Wagner process, melting and pouring under rigid metallurgical controls which preserve the purity of the basic metal itself. We offer you zinc anodes *free* of contamination! And we keep them free of dirt and grit by shipping in sealed, new containers so you can load your tanks directly from the keg.

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If you have not yet tried Flat-Top, the original Wagner zinc anode form, our representative in your area will be glad to bring you up to date. Call him or send in the coupon below. If you would like to receive monthly price data on all the materials and supplies we furnish for platers all over the country, add your name to the Wagner "Price Tips" list.

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Company _____

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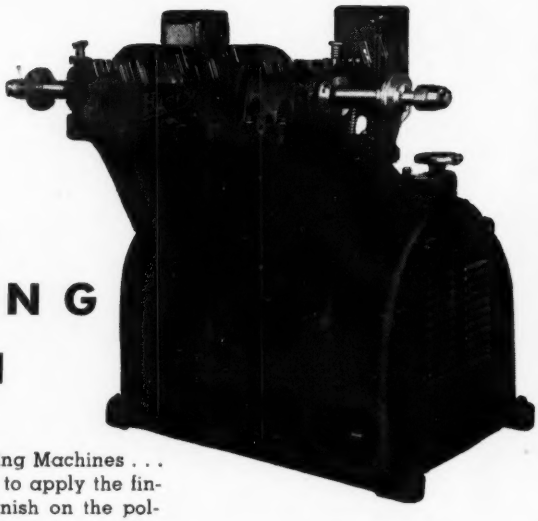

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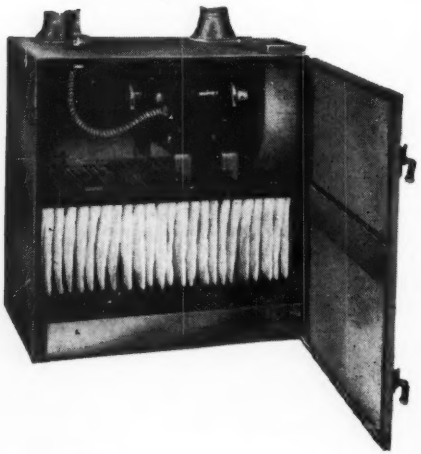

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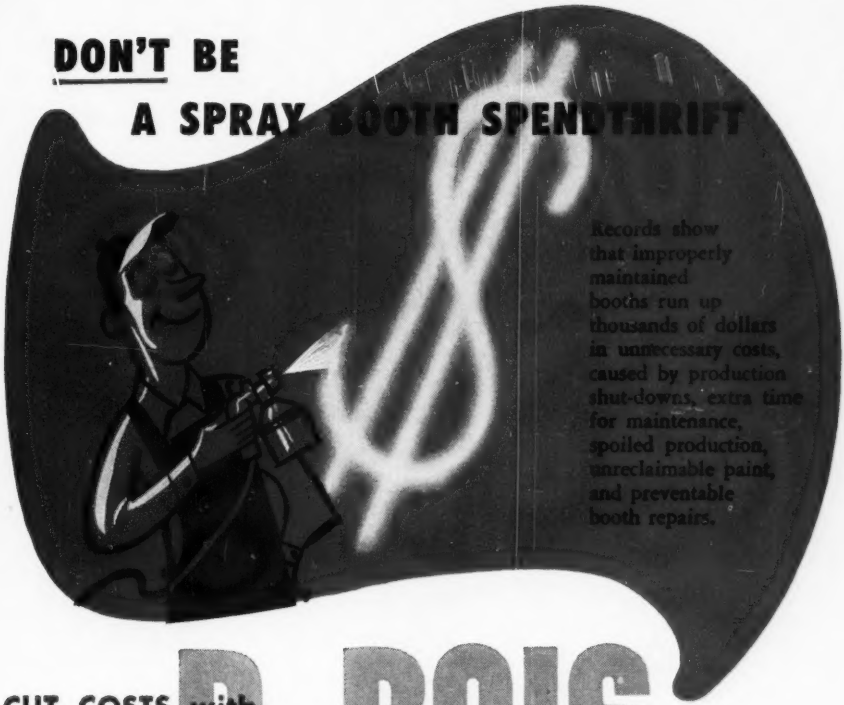

Records show that improperly maintained booths run up thousands of dollars in unnecessary costs, caused by production shut-downs, extra time for maintenance, spoiled production, unreclaimable paint, and preventable booth repairs.

CUT COSTS with DuBOIS SPRAY BOOTH MAINTENANCE

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FREE . . . spray booth maintenance check chart

. . . yours for the asking, a daily, weekly and monthly program for proper cleaning and maintenance of paint spray booths.

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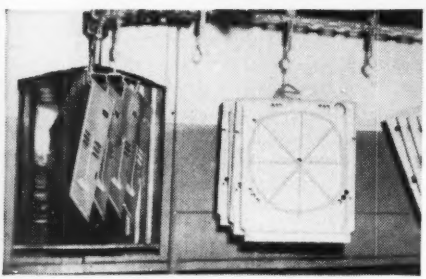
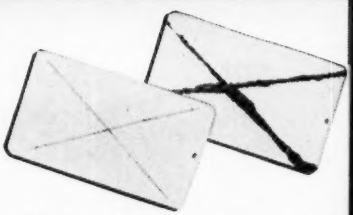
Glidden Technical Service men find NU-PON panel in perfect condition after 1% detergent immersion test, a standard for establishing resistance of finishes to soaps and alkalies.



The excellent stability of NU-PON Primers makes it an ideal flow coating material. It can be collected and circulated again and again without deterioration.



These panels were exposed to a 400-hour salt spray test together. The panel at the left, coated with a thin film of NU-PON Primer has not eroded while the modified alkyd film on the panel at the right has pitted and flaked off.

New NU-PONS Provide Superior Alkali, Corrosion and Moisture Resistance!

Remarkable resistance qualities. Superior durability. Excellent adhesion to various metals. These are the extras which have made NU-PON Primers and Enamels production favorites on the finishing lines of America's leading appliance and home laundry manufacturers.

NU-PON Primers are used wherever metal protection is required, and permit economies because NU-PON Primers can be flow coated, dipped or sprayed in film-thicknesses as low as 0.0003″. NU-PON Enamels provide one-coat or top-coat beauty, plus maximum chemical and corrosion resistance. Use NU-PONS together for lasting product beauty and production savings.

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(ACID ADDITION)

COMPOUND

Stops Pickling Fumes

Cowles AA Compound is packed in fibre drums, 100 lbs. net and 250 lbs. net. AA is available for immediate shipment from conveniently located warehouses. Cowles Technical Service gladly furnished upon request.

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Cowles AA Compound produces a long lasting "FOAM BLANKET" that STOPS pickling fumes.

Cowles AA (Acid Addition) Compound literally "keeps the pickle in the tank", protects men and equipment from dangerous, damaging effects of acid fumes given off by pickle baths.

SPEEDS OPERATION

Cowles AA Compound controls acid fumes by **smothering** them. A **foam blanket** formed on the solution's surface keeps the fumes in the tank—where they belong! Acid strength is not reduced—AA actually **increases** pickling speed.

KEEPS BATHS CLEAN, RINSES FREELY

Cowles AA Compound keeps acid baths cleaner, speeds up soil breakdown, rinses freely and completely. AA can be added to any acids used in the metal pickling process.*

HELPS CONTROL TEMPERATURE

AA's **foam blanket** holds the heat in the tank, makes temperature control easier. Less steam is needed to reach and maintain workable temperatures. Just three ounces of AA to one hundred gallons of solution is the quantity usually needed.

STABLE, LONG-LASTING

Cowles AA Compound is a white, granular powder, dust-free and slightly acid. Added directly to the pickle bath, AA produces a stable, long-lasting **foam blanket.**

MAKES PICKLE ROOM "LIVABLE"

The **foam blanket** will stop the unpleasant, destructive fumes; will make your pickle room a pleasanter place to work in; will lengthen the life of your equipment; will save time and money in the pickling operation.

*When oxidizing acids are used consult your Cowles Technical Man.

PF editorial

MARCH, 1954

Vol. 18, No. 6

Machines and People

Among the many trends affecting American industry today, two are well defined. One of these is the trend toward mechanization, or the automatic factory. Great strides are being made in this direction both in product fabrication and in product finishing.

One illustration of the trend toward mechanical or automatic finishing is described in the article, "Flow Coating Range and Heater Parts," beginning on page 24 of this issue. In the installation described in this article, metal parts are hung on a processing conveyor, and paint finished and baked mechanically, the process requiring only technical control and normal maintenance functions.

Another trend in industry which has been developing rapidly to the dominant position it holds today is the trend toward improving the personnel relationships in industry. In other words, the granting of more recognition to the part played by the people in industry in creating our national wealth and producing the abundance of goods that is shipped from our factories. This trend is illustrated by the article, "Work Simplification Programs for the Metal Finisher," beginning on page 38 of this issue.

In this article the author stresses the importance of making each employee feel that he or she is an important part of the organization. Pointing out the fact that no organization can rise higher than the people comprising that organization, the author shows that the first step in improving finishing or production methods is to secure the interest and cooperation of the individual employee. Progress can then be made in improving the efficiency of an operation or a process; nothing can be accomplished without employee cooperation.

These two articles suggest two distinct means for improving plant efficiency in these competitive days. For the plants whose operations lend themselves to mechanization, one solution is to install mechanical finishing equipment of various kinds. But for all plants of whatever size or kind, there is the solution of doing more with what they now have, by securing from their employees, not necessarily a greater amount of effort, but a greater degree of interest in their company.

After all, we still need people to design the machines, install the machines, service the machines, and RUN the machines.

Ezra A. Blount

—EDITOR

Flow Coating

Many and varied are the methods of applying paint finishes to metal products of all kinds. One of the techniques that has been employed in recent years is that of flow coating. A new installation for finishing various range and heater parts by conveyorized low pressure flow coating has just been completed in the plant of the RCA Estate Appliance Corporation, Hamilton, Ohio.

By EZRA A. BLOUNT
Editor

PF FEATURE

The many different elements which are assembled into the gas and electric kitchen ranges, and gas and oil heaters manufactured by the RCA Estate Appliance Corporation require a number of different finishes in order that the completed products shall have attractive, durable, and serviceable surfaces. Such finishes include electroplating, porcelain enameling, and various paint or baked enamel finishes, as determined by the appearance, service characteristics and requirements of the parts under consideration.

Originally established as a foundry in 1812, in 1886 the company became one of the first three manufacturers of gas ranges. In 1910 the first Estate electric range was introduced. Well aware that home appliances must not only perform their function satisfactorily, but must also have a pleasing appearance, the company's engineers have devoted a substantial portion of their efforts to a consideration of proper finishes for all elements of an appliance, bearing in mind the characteristics which the surface of each part must exhibit.

Engineering personnel have been equally alert to take advantage of developments in manufacturing and finishing techniques which would improve the efficiency of the operation, and at the same time produce a product or finish of the same or higher quality. Of recent years, productivity has become an even more important factor in the appliance manufacturing industry, just as it has in any other branch of industry, and in that connection, mechanized or "automatic" finishing processes

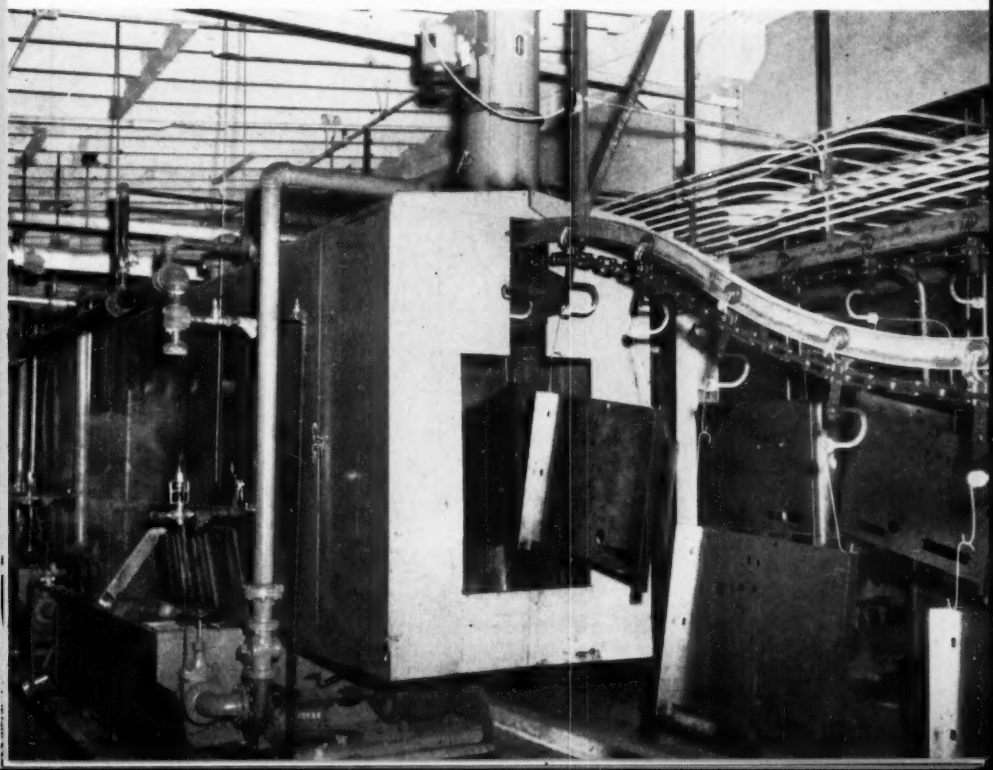
Range and Heater Parts

have become increasingly popular and important.

Flow coating is a paint finishing process that lends itself well to mechanized finishing. The process, in its present state of development, makes possible the successful coating of several different kinds and shapes of parts. At RCA Estate, 20 gauge cold rolled steel stove panels, range drawers, and various other parts are given an attractive and durable finish by applying a single coat of gray flow coat enamel, which is subsequently baked to form a film 1.5 mils thick, in a completely conveyorized finishing installation.

The finishing installation, design-

Fig. 1—Range panels enter the five-stage spray cleaning and phosphatizing machine to receive a surface coating which will inhibit corrosion and serve as a firm bond for synthetic enamel. Supply tanks for the solutions used in the various stages of the machine are located below the machine with access doors on the left side of the tunnel for ease in charging. All pumps, temperature regulators and other controls are located along the side of the machine adjacent to an aisle. The floor area occupied by the machine is connected with a floor drain. As can be noted in the photograph, a low dam keeps processing solutions from adjacent floor areas. Located immediately above the entrance to the cleaning and phosphatizing machine is one of the exhausts (air curtain) which aids in preventing escape of hot vapor. In the right background can be noted cleaned, phosphatized, and dried range panels returning along one side of the phosphatizing machine and cooling prior to their entrance into the flow coat booth.



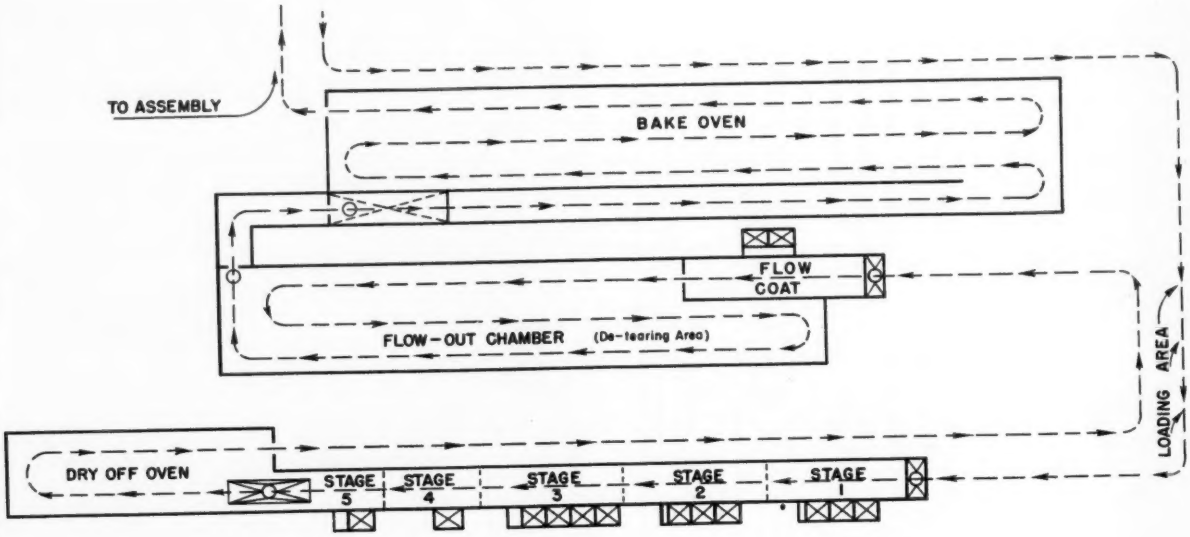


Fig. 2—Sketch showing a plan view of the cleaning and finishing installation. Dashed lines indicate the path taken by the overhead monorail trolley conveyor in transporting range and heater parts through the finishing system.
(Illustration courtesy George Koch Sons, Inc., Evansville 4, Indiana)

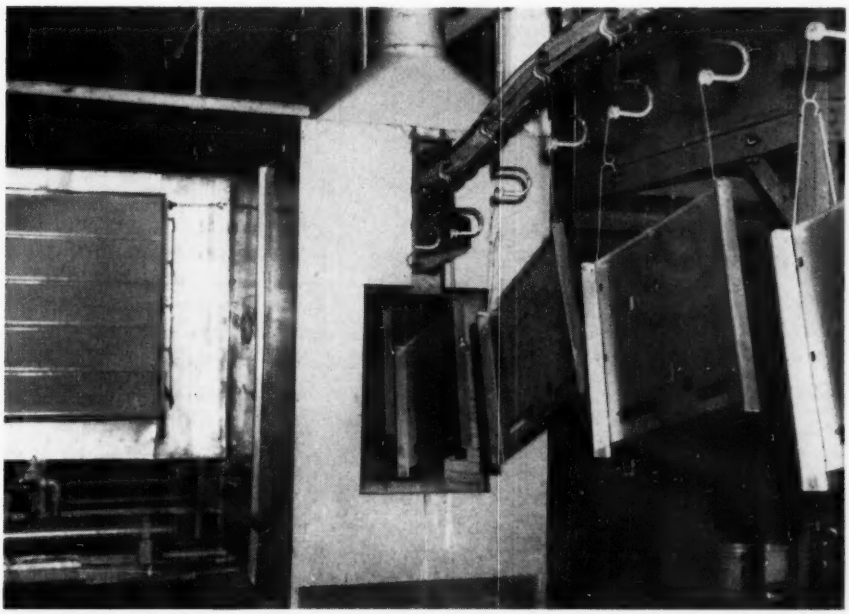
ed and installed by Geo. Koch Sons, Inc., Evansville, Indiana, consists of a metal cleaning and phosphatizing tunnel (Fig. 1), the low pressure flow coat booth and adjoining solvent vapor chamber or de-tearing area, and an overhead baking oven. A monorail trolley conveyor carries the metal parts, suspended from conveyor hangers located on 24 inch centers, through the entire process and on to the final assembly department at a speed of 11 feet per minute. Figure 2 is a plan view of the finishing installation.

Metal Surface Preparation

Stove panels to be cleaned and flow coat enameled are loaded on the processing conveyor at the loading area indicated in Fig. 2 and proceed to the spray phosphatizing tunnel (Fig. 1) for cleaning and surface treatment. The processing cycles in the machine are as follows:

1. Spray wash 1 minute in 1 oz./gal. solution of Parco 511, at 150-160 deg. F. The solution is circulated through the spray nozzles at 15 p.s.i. from a 1050 gallon tank by a 400 g.p.m. pump. The solution is steam heated by Platecoils and the temperature is controlled automatically.
2. Hot water rinse (150 deg. F.) for 1 minute. The hot water is

Fig. 3—A view of the entrance to the low pressure flow coat booth in which range panels and other stove parts receive a coating of gray enamel. The booth is designed so that the conveyor chain is protected from the flowing paint. Just to the left of the booth entrance may be seen one of the adjustable dampers which aids in controlling the concentration of solvent vapor in the flow-out chamber. Located immediately above the flow coat booth entrance can be noted an exhaust which serves as an air seal for the booth opening.



pumped through the system, as is the cleaner solution, and then is allowed to overflow to the drain.

3. Spray phosphatize 1 minute at 155 to 165 deg. F. in a solution of Bonderite 1000 (7-oz./gal.). The solution is circulated through the spray nozzles at 10 p.s.i. from a 1365 gallon tank by a 370 g.p.m. pump. The solution temperature is maintained automatically, the solution being steam heated through electropolished Platecoils located in the tank.
4. Cold water spray rinse for ½ minute. The water circulated through the sprays at 10 p.s.i. overflows to the drain.
5. Spray rinse for ½ minute in Parcolene No. 1 (1 pint/100 gal.) held at 150-160 deg. F. The solution is circulated at 10 p.s.i. from a 472 gallon tank.
6. Dry at 300-325 deg. F. for 3 minutes in gas-fired circulating air U-shaped oven.

Exhausts are located at the entrance and exit of the phosphatizing tunnel, and air seals are located at the dry-off oven entrance and exit, as can be noted in Fig. 2. Phosphatized and dried parts return along the full length of the cleaning and phosphatizing tunnel to cool prior to entry into the flow coating machine (Figs. 1 and 2).

Flow Coating

Range panels, still on the process conveyor, enter the low pressure flow coat booth (Fig. 3) where a coating of Glidden No. 5003 Gray Flow Coat Enamel is applied. The gray flow coat enamel is pumped from a 300 gallon supply tank through filters and temperature controlling equipment and through pressure regulating valves to two headers or risers spaced 18 inches apart. Each header has an individual pressure control. The enamel is flowed onto the metal parts from 60 nozzles located on the two sets of risers, and mounted at

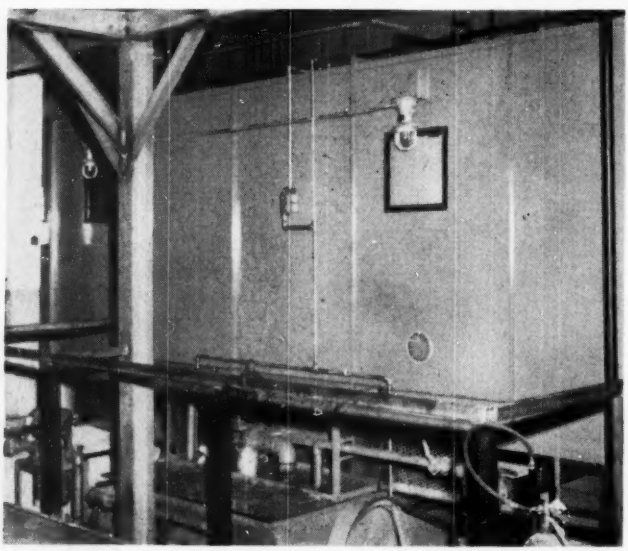


Fig. 4—A view of one side of the flow coat booth proper. Located below the flow coat chamber are the supply tank, circulating pump, filter, and other control and accessory equipment involved in the process.

the proper angles for complete coverage of the products being painted.

Excess enamel drains from the painted parts into collecting pans at the bottom of the flow coat chamber, and passes through sieves or strainers back into the supply tank.

The gray enamel is circulated from the storage tank through the nozzles at 7 p.s.i. The nozzles produce round streams, although nozzles may be designed to produce other types of streams, as required for coating products of various kinds. Enamel viscosity is controlled by solvent addition, and enamel temperature is held at 78 deg. F. by a refrigeration unit and a heat exchanger incorporated into the pumping system. The coated stove parts drain for 20 minutes in a flow-out or controlled solvent vapor drain chamber (de-tearing area), which adjoins and is a part of the flow coat booth (Fig. 4). The controlled "vapor drain" aids in the formation of a film of uniform thickness from the top to the bottom of the panel or part, and makes possible the formation of a smooth enamel coating free from sags, blisters, runs, streaks, beads, or other similar defects.

Two exhausts are used to control the solvent vapor concentration in the flow-out chamber. In addition, two adjustable dampers (Figs. 3 and 5) located on opposite ends of the chamber, can be pre-set to work in conjunction with the exhausts to admit air as needed. Most of the air enters at the entrance to the flow coat booth and is exhausted at that point, along with any shop dust, so that the enamel is kept clean.

The entire flow coat and drain chamber is protected from fire with a carbon dioxide double shot system, backed up with a water sprinkler system.

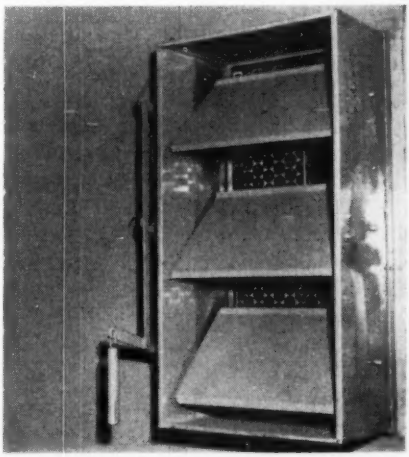


Fig. 5—On the end of the flow-out chamber (de-tearing area) opposite to the side on which the main damper is located, is mounted another, smaller, adjustable damper. This close-up view shows details of the construction of this air inlet which may be adjusted according to the solvent vapor concentration in the flow-out chamber. The dampers are set to maintain the vapor concentration at a point well below the danger point, which will, at the same time, produce a smooth flow coat finish.

The entire floor of the flow coat and drain chamber is sloped back to the enamel circulating tanks. The enamel drains back into the 300 gallon paint tank where it is filtered and circulated through the system by the 200 g.p.m. paint supply pump. Paint pressure is controlled at 7 p.s.i. by means of by-pass valves.

Baking

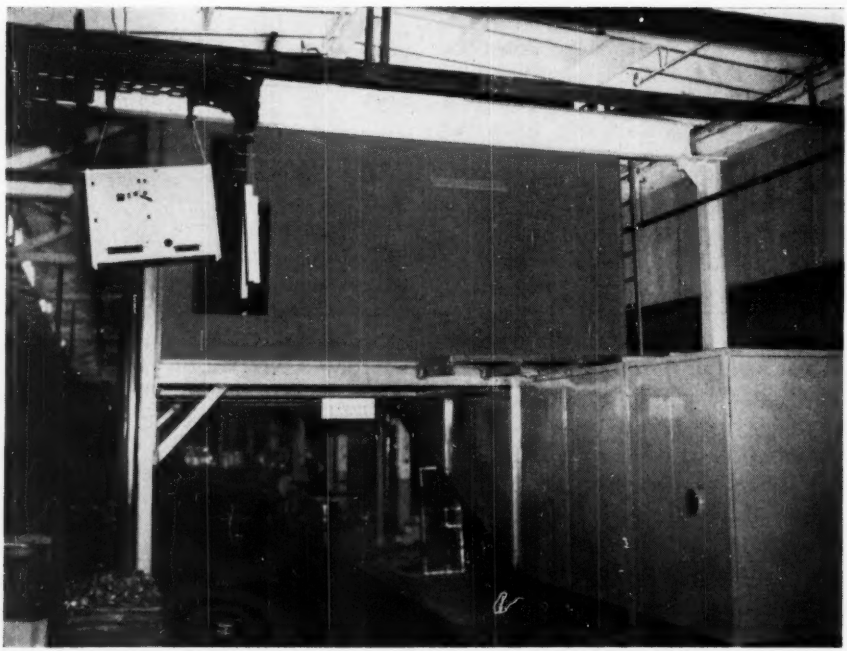
Following the 20 minute travel through the de-tearing chamber, enameled range panels pass through an enclosed tunnel up to the baking oven, located above the factory floor,

as shown in Fig. 6. The finish is baked for 30 minutes at 325 deg. F., as the parts travel through the gas-fired oven on the transport or process conveyor. At the end of the baking cycle, parts pass out through the oven exit, as shown in Fig. 6, and are transported to the assembly department.

Baking oven temperature is thermostatically controlled at several points within the oven to achieve uniformity of baking. An exhaust is located at the oven entrance, and an air seal is built into the oven exit. Since painted parts enter the oven from below, there is a "natural air seal" at that point. The exhausts control the oven atmosphere and insure proper air circulation.

The flow coat finishing installation in the RCA Estate Appliance Corporation plant is an excellent example of a compact, efficient production unit. The equipment, including the cleaning and phosphatizing tunnel and the flow coating and flow-out chambers, located on the factory floor, occupy a floor space approximately 40 by 140 feet. The baking oven, located above the working level is approximately 16 feet wide,

Fig. 6—The oven in which flow coated range panels are baked is located at ceiling height in the RCA Estate Appliance Corporation plant. At right in the photograph is the end of the de-tearing chamber and the sloping entrance through which flow coated panels are transported into the oven through an enclosed tunnel. After completing the 30 minute baking cycle, stove and heater parts leave the baking oven at ceiling level as shown at the left in this photograph, and are conveyed to the assembly area which is located on another floor of the plant.
(All photos by PRODUCTS FINISHING)



84 feet long, and 8 feet high. Once parts are hung on the conveyor chain, the process operates automatically, only the usual maintenance and process control functions being required.

A hot-dip method of coating steel with aluminum by the addition of glycerine has been announced by the British Iron and Steel Research Association in London. The new method involves preparing the steel surface with a protective skin of glycerine before dipping. This is said to prevent two major difficulties found in previous "open dipping" techniques: hard and brittle layers of alloyed aluminum and iron were apt to form on the strip instead of the soft ductile coating desired, and an adhesive skin spread across the surface of the aluminum like the scum on top of hot milk.

The glycerine coating prevents both these difficulties. As the wire or strip enters the bath through a protective carbon box, the glycerine burns quietly, preventing the ingoing strip from oxidizing. In addition, it is claimed that the process is such that the steel can be annealed at the same time it is coated.

At a large automobile company, twenty-seven painting operations are carried out on two miles of conveyor lines. The paint storage rooms have 28 tanks, capacity 120 gallons each. Paint is supplied to the body spray booths through nearly 3600 feet of pipe.

(Courtesy "Dyelines and Bylines," American Cyanamid Company, Calco Chemical Division.)

In 1952, for the third successive year, International Nickel maintained production at capacity and supplied more than 75 per cent of the nickel used by the free world.

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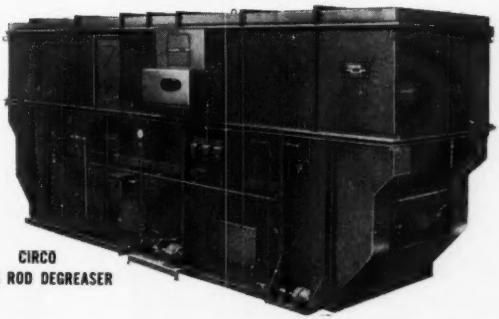

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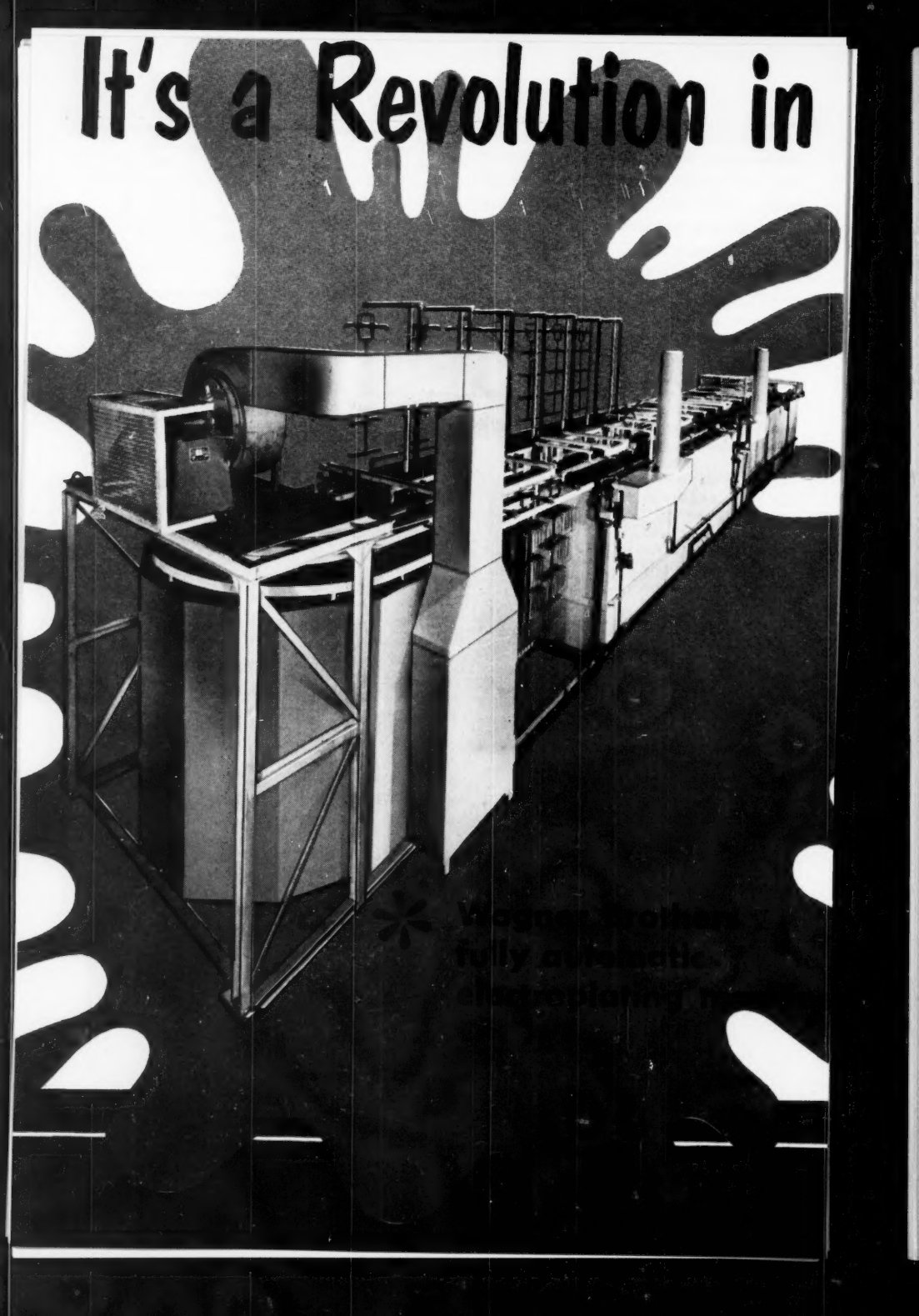

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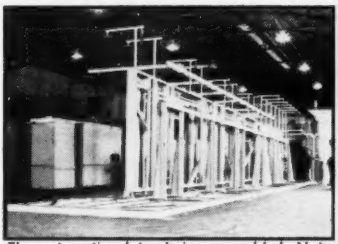
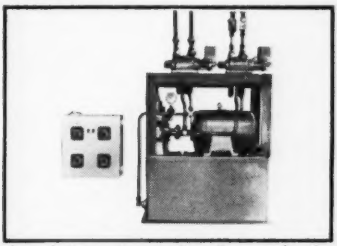
Wire your nearest Wagner representative or call direct at once and get complete information on this revolutionary and efficient New Approach to electroplating automation.

Central lubrication unit (1) at loading station, greases all moving parts while operating. Reciprocating carriage (2) is actuated by simple trouble-free cylinder (3). Decelerating cams (4) operate control valve (5) to assure smooth, long life operation.



The automatic plater being assembled. Note that all lubricated machinery is centrally located—not over tanks—for easy servicing and to preclude contamination of fluid in tanks. This unit is in three sections for economical transportation.



One electric motor supplies all power for the hydraulically driven automatic plater. The power unit and control panel can be installed at any convenient point in the plant for convenience in installation, servicing and operation.

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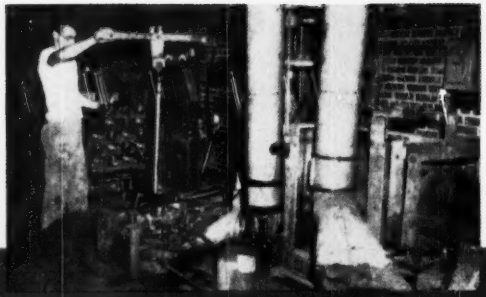


20-year old Chandeysson Motor Generator in service at Miller Electroplating, Inc., Evansville, Indiana

Chandeysson

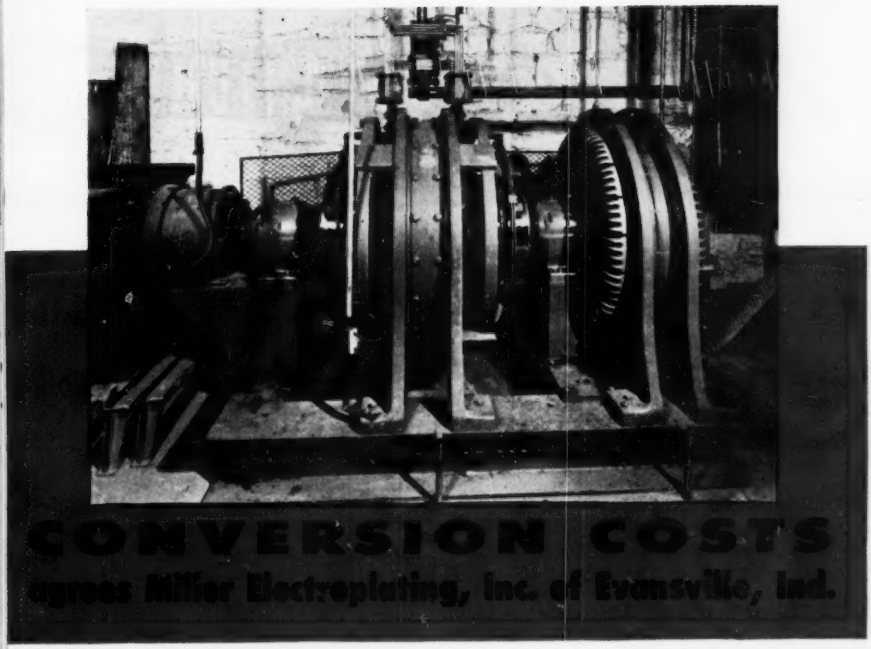
CUTS POWER

Convert with Chandeysson and Save 4 ways

1. Use less power
2. Get more out of the power you pay for
3. Be sure of power when you need it most
4. Enjoy lifetime power dividends

Bulletin D-102 contains complete data on specific and overall savings possible with every Chandeysson installation. If you are interested in power-saving and power dependability, it will pay you to send this bulletin. Yours copy sent promptly, and without obligation.

GOLDEN 1904 Chandeysson 1954 JUBILEE



CONVERSION COSTS

agrees Miller Electroplating, Inc. of Evansville, Ind.

16 hours a day for 20 years carrying overloads of 20% to 25% with the only maintenance in all that time being new brushes . . . that's the Chandeysson record at the Miller Electroplating, Inc. It's not an unusual record—there are Chandeysson units still being used after 48 years of economical service!

Read Mr. Miller's actual letter —

"... We have three of your machines in operation in our plant. The last two being purchased after using the first one for over 20 years.

"Our first machine has been in use on the average of 16 hours a day. A great deal of this time, carrying an overload of from 20 to 25% of its rated capacity. During this time the only maintenance expense has been new brushes. It might be of interest for you to know that the commutator has not even been repaired during this time.

"We are indeed thoroughly sold on Chandeysson Plating Generators.

Very truly yours,
MILLER ELECTROPLATING, INC.

Paul E. Miller, Pres.

Any way you say it, or figure it, such performance is proof once again that "Chandeysson cuts power conversion costs." You can expect similar performance from a Chandeysson installation in your plant. Write or mail coupon for full information.

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News about UNICHROME

Trade Mark

A better finish ...and a saving, too

Plating golf club heads in the Unichrome SRHS Chromium Bath has made a distinct difference to one plant. There is less "burning" and therefore fewer rejects. The finish is brighter. Current consumption is less, which saves power costs. These results are due to the wider bright plate range and higher cathode efficiency of the SRHS Bath. Bulletin gives full facts.

Insulations now made for temporary or long use

Platers can now practically choose a "custom" insulating material for the job on hand. Stopping off for plating, being a temporary application, is best handled by one of the Unichrome Stop-off Lacquers or Compounds. These are easy to apply, easy to remove once the work is plated. For permanent installations, on composite racks, conforming anodes and tank grids, solid Unichrome rods, tubing, and sheets offer the needed durability. For insulating working "tools," such as racks, Unichrome Coating 218X proves best. Specific data on each available.

This Equipment

United Chromium applies

IMPROVED plating processes and coatings go a long way toward assuring the best possible finish at the lowest cost. However, equipment, too, affects results and profits. An inefficient or insufficient current supply gives trouble. Breakdowns in heating or cooling elements snarl production. Anode design affects costs and quality, too.

Realizing this, United Chromium has taken the next step in contributing to finishing department efficiency. Now, in addition to the widely used Unichrome Plating Processes and Unichrome Organic Coatings which supplement them, several specialized types of Unichrome equipment are being made available. Already in service in many plants, they are proving their ability to help reduce costs.

PRACTICAL PAINTING FOR PLATING PLANTS

Painting with ordinary paints doesn't pay off in plating shops. Protecting with Ucilon* Coating Systems *does*. These coatings really withstand the chemical solutions and high humidity. At one plant, for instance, they have given more than 3 years' service on tanks, ducts and walls. Such coatings can obviously lengthen life of equipment, increase time between paint jobs, keep a plant looking better to encourage better work.

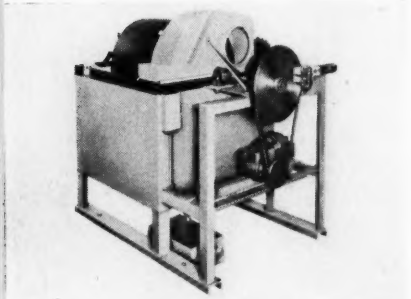
**Trade Mark*

COATINGS for METALS

Metallic . . . . . Organic . . . . . Decorative . . . . . Protective

Helps Cut Finishing Costs

25-year working knowledge of plating to provide equipment for lower operating costs



CHROMIUM PLATING 500,000 PARTS

The Unichrome Chromium Plating Barrel answers at last the problem of chromium plating small parts without prohibitive handling expense. It successfully plates whole batches at a time. Output soars wherever it's being used. At one plant, for example, 500,000 small parts were plated by *one* barrel, in *one* day, by *one* operator.

HEAT EXCHANGERS THAT SELDOM NEED EXCHANGING

Unichrome Tantalum Heat Exchangers, the shell and tube type, have tantalum internal tubes. These tubes maintain heat transfer efficiency, lengthen equipment life in acid solutions, reduce maintenance to an absolute minimum. Result: Lower operating costs.

RECTIFIER WITH OVERLOAD CAPACITY

The line of Unichrome Selenium Rectifiers is complete . . . includes models to meet all plating and anodizing requirements. Self-contained units with built-in meters and controls, basic rectifiers with remote control, water-cooled models for extra protection against corrosion, saturable core reactors for stepless automatic regulation of current or voltage are all available. The Unichrome Extra Heavy Duty Selenium Rectifier carries the same guarantee as a motor generator set – to operate *continuously* at full load and at a 25% overload for two hours. All Unichrome Rectifiers provide full wave rectification with D.C. output that has less than 5% ripple.

ANODES WITH LONG ACTIVE LIFE

The right anodes for chromium plating are those designed to give good current distribution and no overheating; that provide good contact even on caked anode bars; that withstand the action of chromic acid baths during both idle and active periods. Unichrome tin-lead alloy anodes, designed with exactly these features, deliver unusual service.

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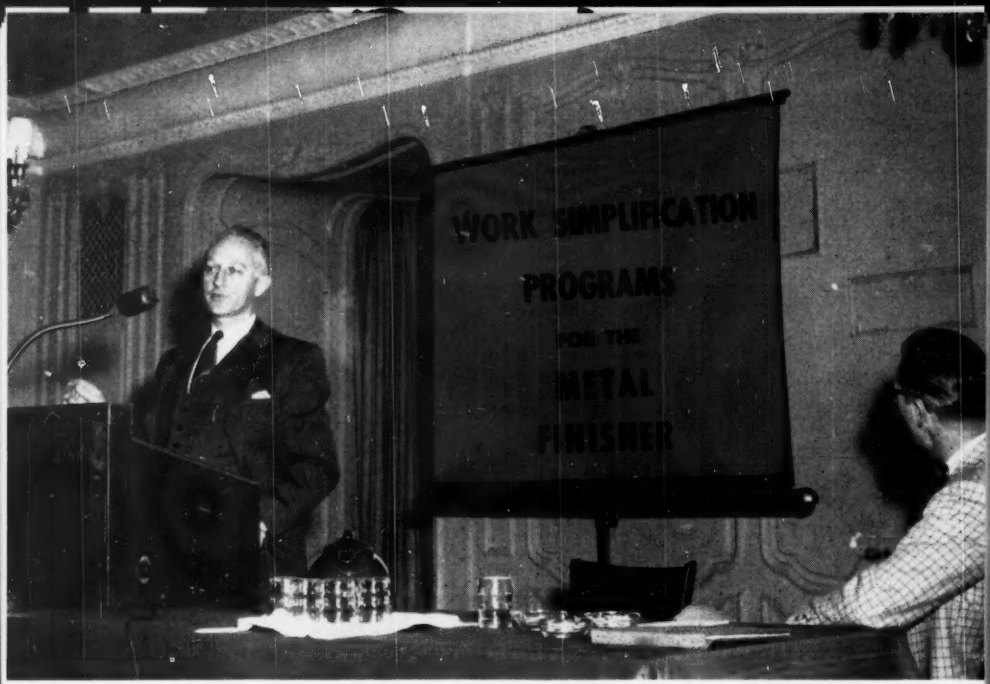


At the First Management Seminar conducted by the National Federation of Metal Finishers, S. J. Fecht (above, left) discussed "Work Simplification Programs for the Metal Finisher." Carl F. Hansen (right), Advance Tinning Co., served as chairman of the Seminar.
(PRODUCTS FINISHING Staff Photo)

By S. J. FECHT
President, S. J. Fecht & Associates, Chicago

WITH the lush days of the post-war years fast drawing to a close, many companies are looking for ways to meet competitor's prices. To those companies that reduce their costs it will mean operating at a profit. To those who fail to reduce costs to meet lower prices it may mean operating at a loss.

Ways to Reduce Costs

There are many ways to reduce costs. You might try lowering the quality of your product, or reducing wages and salaries, or have all employees work harder; or you might even try reducing service to customers. But I believe that all of you would agree that these means of cost reduction would, in due time, result, not in cost reduction, but in ruination of the business.

In the final analysis, the only lasting cost reduction comes from making each employee of the company more productive. The purchasing agent must do a better job of purchasing the materials and supplies; the chemists must produce better

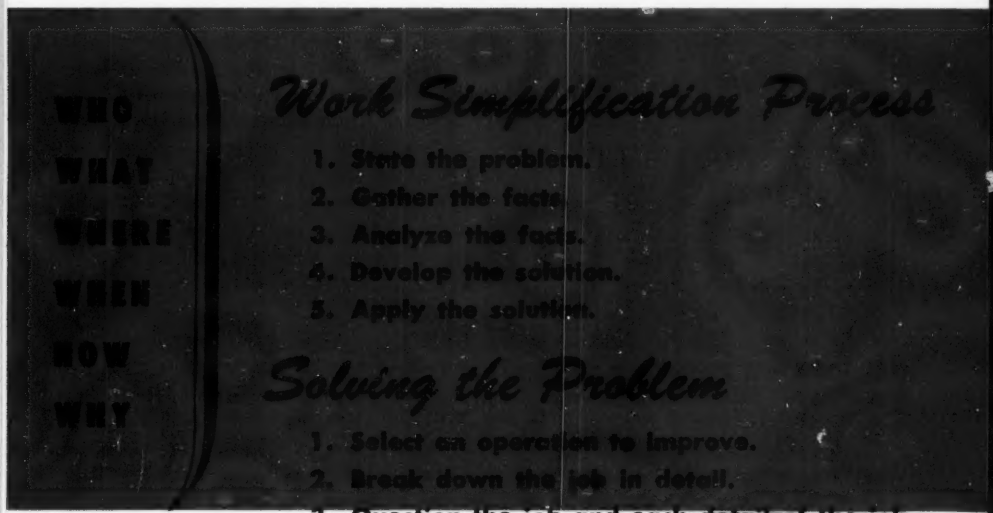
formulas, the engineers better equipment, the production foremen must be better supervisors, and so on up and down the lines of organization to the individual employees who, too, must be more productive.

Organization as Good as Its People

It should be more generally recognized, and yet is so often overlooked, that the growth of any organization is limited only by the capability of its personnel. Accordingly, the foundation upon which a cost reduction program is built must always be the development of the company's employees. This is a concept that is overlooked by some management consultants who come in as a staff of "experts" from the outside, and try to tell a company how to run its business. This wrong approach is analogous to working on the effect rather than the cause—like mopping up the floor rather than fixing the leak in the roof. The reason that some companies are able to produce at lower costs is because that company's own people have done a better job of keeping costs in line.

Most companies are staffed with a fine group of loyal foremen, supervisors and employees. They know their company and their jobs inside and out. But because they do know their jobs and their operations so well, they may be somewhat inclined to assume that their present methods are the very best that could possibly be developed.

Because a company's personnel are so likely to assume that their



present methods could not be improved, it must be the first objective of any cost reduction program to convince the company's personnel of two things: (1) that there is a real need for reducing costs; (2) that further improvement in methods is possible.

Once convinced of the need for and possibilities of cost reduction, they must be taught how to analyze operations, how to develop better methods, and how to install new methods. This technique of analyzing operations, developing better methods, and installing new methods is known in industrial engineering circles as "Work Simplification."

Work Simplification Teaches Employees Cost Reduction Techniques

The logical way to solve any problem is:

1. State the problem.
2. Gather the facts.
3. Analyze the facts.
4. Develop the solution.
5. Apply the solution.

In this way, the solution of any cost reduction problem is achieved through the similar steps in Work Simplification, which are:

1. Select an operation to improve.
2. Break down the job in detail.
3. Question the job and each detail of the job.
4. Develop the new method.
5. Apply the new method.

It will be noted how closely the steps in Work Simplification follow the steps in the logical solution to any problem.

Inasmuch as the problem here is to reduce costs, the first step in the Work Simplification technique, "Select an operation to improve," bears some investigation of where the company's costs are and how much they are. How are the costs divided between labor, material and overhead? How much money is being spent yearly on labor for each operation? What is the value of material wasted on each operation?

The second step of gathering the facts is done by preparing a Process Chart. Each step in the entire process is described, even including, if it is found advantageous to do so, the distance traveled and the average time required for each step.

I believe it will be very evident from the above discussion that as a result of having made up a Process Chart of this type, it will be known WHAT is being done, WHERE it is being done, WHEN it is being done, WHO does it, and HOW it is

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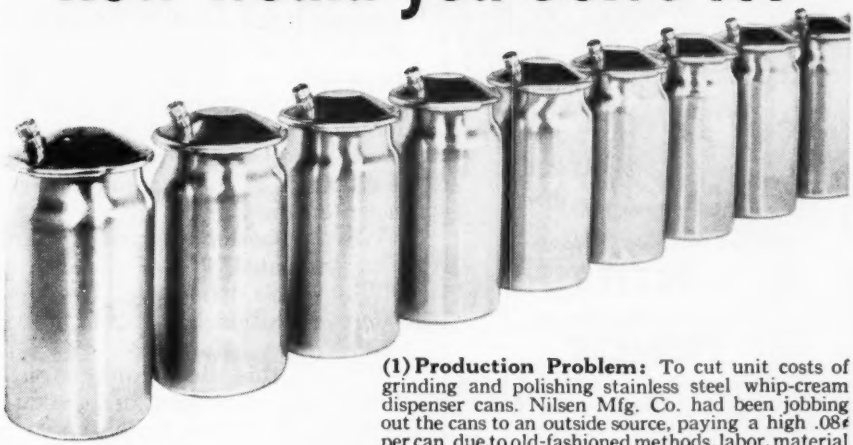
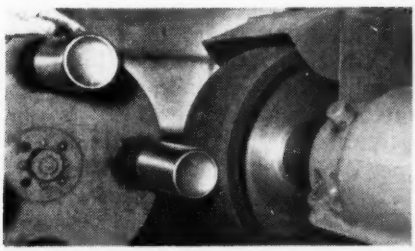
SUBSCRIPTION: $25.00 per person

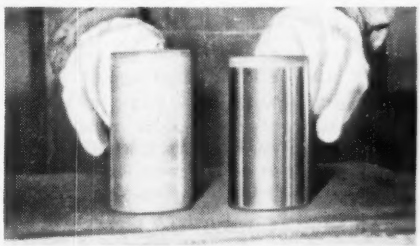
How would you solve it?



(1) Production Problem: To cut unit costs of grinding and polishing stainless steel whip-cream dispenser cans. Nilsen Mfg. Co. had been jobbing out the cans to an outside source, paying a high .08¢ per can, due to old-fashioned methods, labor, material and delivery costs.



(2) Solution: A 3M Representative recommended that this Addison, Illinois, manufacturer install the 3M Method, using Grit #180 Resin Bond Belts running over a special contact wheel. Cans to be finished were placed on automatic work holders.



(3) Results: An immediate reduction in polishing costs. By installing the 3M Method, and doing the work themselves, Nilsen Mfg. Co. cut costs to only $.0125 per finished unit . . . a saving of $.0675 per can! A 3M Representative can help you solve your grinding and finishing problems, too. His services are available without cost or obligation.

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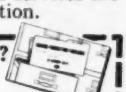

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being done. This procedure pretty well establishes all the facts about the job method.

Above, it was stated that the third step in the solution of a problem is the analysis of the facts, which in Work Simplification is done by questioning the job and each detail of the job. In other words, we ask of each of the steps in the process, as it is shown on the Process Chart:

Why is this step being done? Can it be eliminated?

Why is this done there? Would a different location be a better place to do it?

Why is this step done then? Would a different point in the sequence be a better time to do it?

Why does this person do it? Could it more logically be assigned to someone else to perform?

Why is this step done in this way? Would it be possible to simplify the method of performing it?

As a result of this questioning of the WHAT, WHERE, WHEN, WHO, HOW, and WHY of each of the work phases, many different ways of performing the operation will suggest themselves.

At this stage, the problem is ready for the next phase of solution, which is the development of the new method. From the above enumeration of many different methods-change possibilities, the one best way of performing each step in the operation can be selected and the new method set down on a Process Chart similar to the one on which the old method was recorded, before the re-evaluation. The saving in steps is summarized and the dollar saving is calculated.

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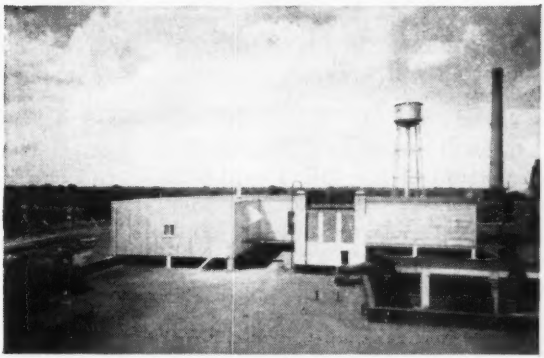

Here's a Finished Baking Oven Installation. It actually enhances the plant picture—A WORTHY CAPITAL ASSET.

Paint Finishing Systems are not "shelf" packages. In all cases, they must be designed to meet the needs and fit within the facilities where they are to be installed. The illustrations show how P-D engineers overcame problems of locating Baking Oven installations. They "took to the air"—installed them on plant roofs with conveyor feeds from other floor levels—eliminating plant expansion while increasing its capital worth

For gaining the utmost in efficiency, economy, and surety of operation to meet your Finishing System requirements, it is most important to check your NEEDS with a firm that has the "know-how." Regardless of the size installation, it does not pay to "pick" and "choose" components separately. Peters-Dalton, with 25 years of Finishing System leadership and experience, offers expert engineering and design. P-D engineers lay out the complete Finishing System to meet whatever requirements and space limitations necessary for a satisfactory installation in your plant.

A Finishing System installed by P-D is tops in efficiency and economy because it is plant engineered and produced step by step for you and you only.

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There remains then only the final step in the Work Simplification technique which is the installation of the new method. This step may be the most difficult one unless the cooperation and participation of the employees concerned is secured. The best assurance of success in installation comes from getting the individual employee to make the suggestion that will work.

An Employee Training Program

You will remember that in the first portion of my talk I said that the problem of cost reduction must be everyone's job and not the job of an outside "expert." That being the case, how are we going to teach the company personnel how to solve the cost reduction problems by the Work Simplification technique? We do it in the following way:

1. We outline a program of 12 Work Simplification Training Sessions.

Besides the technique of Work Simplification, these sessions are designed to convince the participants of the need for cost reduction and to impress upon them the need for keeping an open mind toward different methods of operation. The content of these sessions is tailor-made to each company's operations, stressing those techniques which will yield the greatest benefits.

2. We make motion pictures of some 20 or so of the company's major operations.

In order to "bring the company's operations into the meeting room," we prepare these motion pictures which let the participants see, possibly for the first time, just how those operations are being performed. It is surprising how effective motion pictures can be in bringing out ineffective methods, delays, awkward working positions, poor working conditions, crew unbalance, and so on.

3. Next we prepare a Work Simplification manual.

This manual is individually designed for the company's operations and covers a training procedure and technique which has been successfully used in many other companies.

4. Next we schedule the training sessions.

In order to acquaint them with the training program, we usually schedule a rather brief preview session for the company's executives. Beyond this, we work with the company staff in scheduling the sessions for their superintendents, foremen,

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- ZERO-MIST completely eliminates chrome mist and spray!
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The result of years of intensive research, ZERO-MIST will introduce you to new concepts of economy in chrome plating. Entirely new, chemically different, ZERO-MIST is indestructible! After the original charge of ZERO-MIST in the bath, only small weekly maintenance additions are necessary to replace drag-out losses.

No matter what the concentration, temperature or current density of the chromic acid bath, ZERO-MIST remains unaffected. ZERO-MIST will form only a *thin* foam blanket—in fact, *no* blanket is necessary for its efficient operation. Reduced drag-out through low surface tension and elimination of mist and spray can save you up to 70% of your wasted chromic acid and minimize waste disposal problems.

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and supervisors. These meetings are usually held on company time once each week for a period of about two hours at a time. The groups usually range from a minimum of 10 or 12 individuals to as many as 18 or 20.

All the details, such as equipment and facilities, motion pictures, slides, charts, graphs, required for each session, are listed in the outline, so that nothing is overlooked.

5. We conduct the training sessions.

From a detailed outline, which assures that we will not wander too far from the desired subject matter, we lead the session discussion, show motion pictures, display charts, give demonstrations, and cite examples from our own experience to emphasize each point. The years of experience in conducting sessions like this has taught us the value of a "change of pace" which we accomplish through the use of motion pictures, slides, charts, and demonstrations.

As the meetings progress from the first toward the last of the 12 sessions, we do less and less of the talking and instead draw out discussion from the participants concerning the application of the points of discussion to their own problems. It is at this point that we introduce the motion pictures of the company's own operations. We are always very careful not to criticize the present methods, but instead, by asking leading questions of the operations as the pictures are being shown, we get the participants to make the suggestions.

By this technique it is they who make the suggestions rather than we. Any suggestion that a supervisor may make about his operation is

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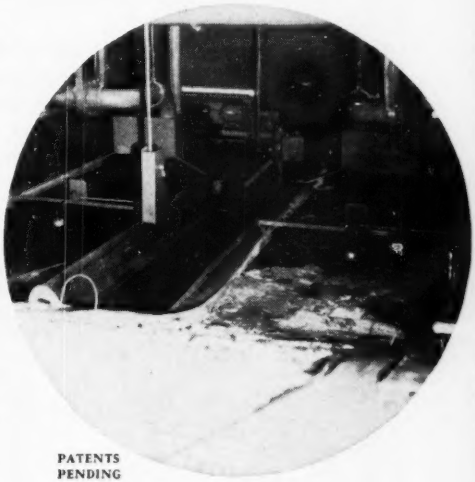

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thus "sold" from the start, because it is he who made the suggestion.

6. We train a company man to carry on and follow up the training program.

To be of lasting benefit to a company, a training program of this sort must be more than a mere "shot in the arm"—it must be a continuing thing.

In order to perpetuate the benefits of a training program of this type we work with a man appointed by the management. This man assists us in the development of the training material, in the preparation of the movies, and in the scheduling of the sessions.

If the company has a considerable number of supervisors, more than can be conveniently trained in the relatively short time we are in a plant, then the company's man is especially trained by us to conduct subsequent training programs.

7. As the final step in the Work Simplification training program, we establish a follow up procedure.

Our Work Simplification training conferences are not left hanging at the end of our training sessions. These conferences are more than a mere 12 sessions of training that the supervisors are at liberty to use or not to use when the sessions are completed. Obviously, the supervisors are not forced to apply this technique, but their interest will have been sufficiently stimulated, so that with the proper follow up from the company's man and with the proper recognition from management, the supervisors continue to apply the technique.

In order to summarize the tangible benefits of this training, the company's follow up man keeps a running record of the methods improvement projects under way which he follows periodically and on which he gives assistance to the supervisors. From this running record a periodic progress report is given to management, summarizing the benefits in dollar savings resulting from the program.

One of the questions concerning a program of this type quite logically is "How effective can a program of the above type be toward reducing costs?" The answer to this question depends, of course, on two factors. The first of these factor is the present effectiveness of the company's operation, and, secondly, upon the enthusiasm with which the supervisors attack the cost reduction problems.

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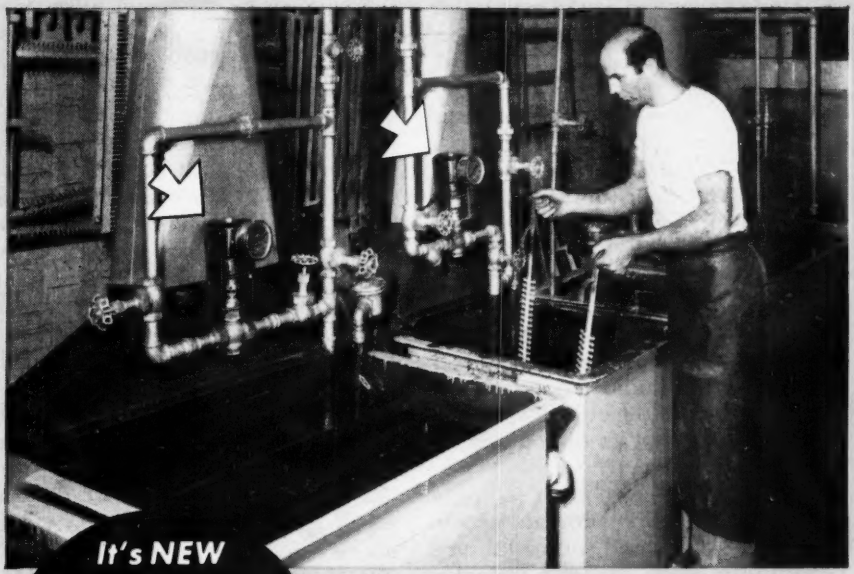

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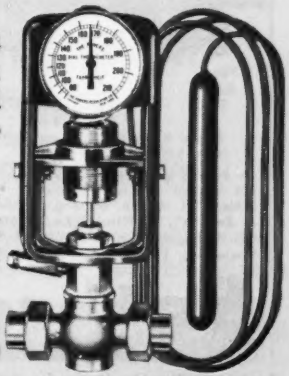

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A good gauge to use in estimating savings is between 12 and 20 per cent of the payroll costs. It is granted that a training program as complete and interesting as the one laid out above can not be put on for as little as $200 or $300, but if the cost of a program like this is compared with the possible savings resulting from its application, it will be seen that the cost is a very small percentage of the savings potential. Nor is the tangible saving in dollars of payroll cost the only benefit derived. Although the dollar saving due to improved morale can not be calculated, it must not be discounted.

Summary

A cost reduction program can be most successful, and successful on a continuing basis, only if it makes the company's personnel more productive through training in cost reduction. The Work Simplification technique is the logical way to reduce operation costs, and this technique can be taught to the company's personnel through a series of interesting training conferences. These training conferences are productive of tangible, recorded and reported savings far in excess of their cost of installation and maintenance. Over and above the dollar savings are other benefits which, although intangible, can for many individuals outweigh the tangible benefits. Such intangible savings come in the form of improved morale and a better understanding of employees in the plant as human beings who want, above anything else, RECOGNITION and a FEELING OF IMPORTANCE.

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Adapted for publication in PRODUCTS FINISHING from a paper presented before the First Management Seminar sponsored by the National Federation of Metal Finishers, January 30, 1954, Conrad Hilton Hotel, Chicago.

Silver plated ware is normally stamped from nickel silver, an alloy of nickel, copper and zinc, and then electroplated with silver.

Nickel plating was developed on a commercial basis about 1870.

Until about half a century ago there was little demand for nickel except for nickel plating, for nickel coins, in the alloy nickel silver used to make certain household articles, and as a base for silver plated ware. Since that time, and especially since 1921, hundreds of additional uses have been discovered for this metal, largely through scientific research.

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Spotlight on FINISHING Progress

The Finishing of Aluminum

Finishing Systems for Aluminum Die Castings

Formation of Immersion Zinc Coatings on Aluminum

THE finishing of aluminum is a large specialized field within the metal finishing industry. The finishes which are applied to this versatile metal, which may appear in forms ranging from large structural shapes and complicated chassis to simple household objects, which may be wrought, cast, or die-cast, and which is produced in a large variety of alloys with different mechanical and chemical properties, are almost as varied as its uses. Finishes for corrosion protection or abrasion resistance may be applied; other finishes, the major function of which is to serve as a paint base, are used; and finally, a wide variety of decorative finishes may be applied. In addition there are those applications in which a finish having all of these properties is re-

NEW PROTECTIVE COATING CHEMICAL FOR ALUMINUM

ALODIZING

Alodizing with "Alodine,"* a new technique in the protective coating of aluminum, was made available for production-scale use in 1946. Since that time Alodizing has largely supplanted the more elaborate, costly and time-consuming anodic treatments in the aircraft and other industries.

Continuous and successful industrial use has clearly demonstrated the simplicity and economy of the Alodizing process as well as the effectiveness of the "Alodine" amorphous coatings, particularly as a base for paint. In fact, the paint-bond that Alodized aluminum provides has been found to be superior to that possible with chromic acid anodizing.

The corrosion-resistance of unpainted aluminum Alodized with "Alodine" Nos. 100 or 300 is excellent, easily meeting the requirements of Specification MIL-C-5541. However, a need for protection of unpainted aluminum, even better than that obtained with chromic acid anodizing, has long been recognized.

NEW IMPROVED "ALODINE" DEVELOPED By ACP RESEARCH CHEMISTS

Several years of intensive research have now led to a new type of "Alodine," designated as "Alodine" No. 1200. This new protective coating chemical forms an amorphous mixed metallic oxide coating of low dielectric resistance that provides unusually high corrosion-resistance for unpainted aluminum. In addition, it forms an excellent paint bond that approaches closely the high quality obtained with the earlier types of "Alodine."

After having been tested for conformance with Specification MIL-C-5541, "Alodine" No. 1200 is now about to go into production.

PROCESS DETAILS

"Alodine" No. 1200 is the only essential chemical needed to prepare the coating bath and the final rinse bath. One of its unique features is that it can be used in tanks in an immersion process, or, in a multi-stage power washer in a spray process, or, with a slight adjustment of pH, with brush or portable spray equipment in a manual process. This means that even where the simple production equipment is not available, or where touching up of damaged coatings previously Alodized or anodized is required, excellent protection and paint bonding can still be obtained with practically no equipment.

All three methods of application easily meet the requirements of Specification MIL-C-5541.

Process sequence for all three methods of application is the same as for other standard grades of "Alodine" such as Nos. 100, 300, and 600, viz.: 1. Pre-cleaning. 2. Rinsing. 3. Alodizing. 4. Rinsing. 5. Acidulated rinsing. 6. Drying.

Coating time in an immersion process ranges from 2 to 8 minutes and in a mechanized spray process is about 30 seconds. "Alodine" No. 1200 baths are operated at room temperatures (70° to 100°F.) and heating is required only if the bath has gotten cold after a "down" period.

RECOMMENDED USES FOR "ALODINE" No. 1200

"Alodine" No. 1200 is specifically recommended for coating wrought products that are not to be painted or are to be only partially painted; and for coating casting and forging alloys whether or not these are to be painted. "Alodine" Nos. 100 and 300 are still recommended for coating wrought products such as venetian blind slats, awnings, etc., that are invariably painted.

RESULTS OF TENSILE TESTS

This new "Alodine" not only retards visible corrosion and pitting, but as shown in the table below, the loss of ductility with "Alodine" No. 1200, both brush and dip, after 1000 hours salt spray was less than for chromic acid anodizing after 250 hours, and for "Alodine" No. 100 and a conventional chromate treatment after 168 hours exposure.

PROCESS	SALT SPRAY EXPOSURE	COMPLIANCE WITH TENSILE REQUIREMENTS OF MIL-C-5541
CHROMIC ACID ANODIZING	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	fails
	1000 hrs.	fails
BRUSH "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 1200	168 hrs.	passes
	250 hrs.	passes
	500 hrs.	passes
	1000 hrs.	passes
DIP "ALODINE" No. 100	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails
CONVENTIONAL CHROMATE TREATMENT	168 hrs.	passes
	250 hrs.	fails
	500 hrs.	fails
	1000 hrs.	fails

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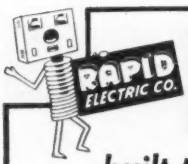
quired. In addition to the variety of its applications, there are two properties of aluminum which make the finishing of aluminum and its alloys a specialized field; namely, the great chemical activity of the metal, and the rapidity of formation and extreme passivity of its naturally-formed oxide coating. In a few instances, coatings have been developed in which these properties are used to advantage, while in others it has been necessary to overcome the effects of these properties.

It is only during the last decade that most of the finishes for aluminum, now in use, were brought to satisfactory commercial application, and there are many problems in this field which have not yet been satisfactorily solved. During the last few months a number of interesting papers on various aspects of this subject have been published, and two of them are reviewed here.



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Finishing Systems for Aluminum Die Castings

METHODS for the finishing of aluminum die castings are reviewed in "Precision Metal Molding," II, No. 6, 58 (1953) by R. V. Vanden Berg. The author discusses six general methods for the finishing of aluminum alloy die castings; namely, polishing and buffing, barrel finishing, chemical treatments, electroplating, anodic coatings, and organic coatings.

Polishing and Buffing

The surface of aluminum alloy die castings is quite smooth and can usually be brought up to mirror finish with little polishing. However, the projections on the surface caused by "gating," ejection pins, or parting lines must be removed by polishing. In general, the polishing should be kept to a minimum so as not to cut through the dense smooth skin and expose the porous sub-surface structure characteristic of die castings. The author recommends that polishing to remove surface irregularities be carried out using rag, felt, canvas, or leather wheels faced with 60 to 220 emery, and operated at surface speeds of 6000 feet per minute. Methods employing backstands may be used provided there are proper contact wheels and sufficient lubrication of the correct type. Lubrication during polishing is particularly important in order to prevent overheating and "tearing" of the metal surface. Maximum luster may

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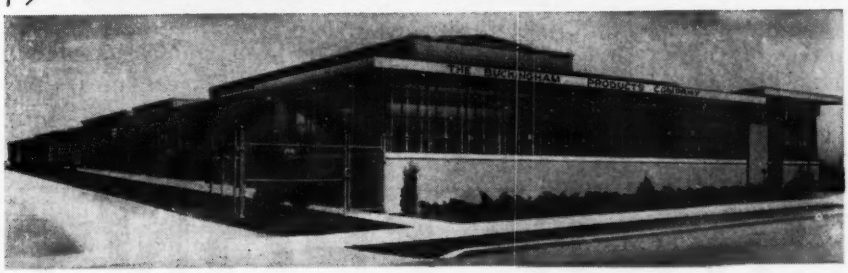

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be obtained by buffing with tripoli on stitched muslin followed by coloring with rouge or silica compounds on loose unstitched muslin at surface speeds of 7000 to 8000 feet per minute.

Satin finishing compounds may be used on polishing wheels for removing mild irregularities, and at the same time, for producing a satin finish on the part. Satin finishing may also be accomplished with wire wheels rotating at 600 to 1000 feet per minute. Stainless steel wire wheels are preferred by the author. He suggests that if other types of wire wheels are used, a short dip in concentrated or 1:1 nitric acid be used after brushing to remove any imbedded metal particles which may cause corrosion of the aluminum surface.

Barrel Finishing

Barrel finishing is very low in cost and can be used to smooth and brighten the surface. With certain variations in technique, it can also remove parting lines, gate marks, and other irregularities. Barrel burnishing is usually carried out in wood or rubber-lined barrels operated at 8 to 40 r.p.m. for 20 to 60 minutes. If surface metal is to be removed, the castings may be mixed with granite chips; but if a luster is required, only steel balls, diagonals, stars, or other suitable shapes should be used. A mixture of water and a neutral soap is used as a lubricant. It is very important that the soap not be strongly alkaline because it would then attack the aluminum with the evolution of hydrogen. The author warns that hydro-

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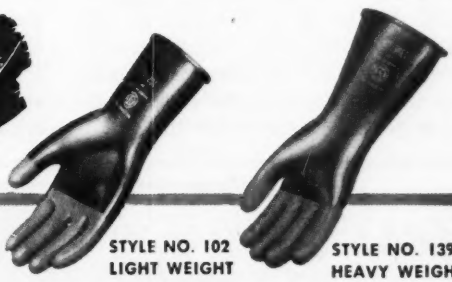

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Table I

Component	Standard Zn Immersion Soln.	Modified Zn Immersion Soln.
Caustic soda (Comml. 76%)	70 oz./gal.	70 oz./gal.
Zinc oxide	13 "	13 "
Ferric chloride crystals	———	0.13 "
Rochelle salts	———	1.3 "
Temperature	70-80 deg. F.	70 - 80 deg. F.

gen pressure which develops in a barrel under these conditions can cause accidents when the barrel is opened. Finally, the steel shapes used for burnishing should be washed periodically in caustic soda solution to remove surface accumulations. Combination of a suitable etch prior to the burnishing, with special techniques of burnishing, will produce a finish which appears to have been buffed.

Chemical Treatments

A chemical treatment for producing a uniform surface is an etch in an alkaline solution based on caustic soda. The high silicon content of most of the aluminum die castings produces a smut on the surface which must be removed by a subsequent dip in an acid solution containing hydrofluoric acid or an acid fluoride salt. Mr. Vanden Berg states that aluminum alloy die castings do not respond satisfactorily to the Alcoa R5 Bright Dip. Conversion coatings in commercial use are based on treatment in alkaline solutions, and the various phosphate treatments based on acid solutions. Temperatures vary from 75 to 180 deg. F. and immersion times from 10 to 20 minutes. The acid treatments have the advantage of shorter immersion time, but require acid resistant tanks. Steel tanks may be used for the alkaline treatments.

Electroplating

The successful commercial applications of electroplating on aluminum die castings are based on procedures involving the zincate dip and its modifications. Table I gives the solution compositions recommended by the author. Either a single immersion process with an acid fluoride dip, or a double immersion procedure may be used. The flow sheet for both of these procedures is shown in Figure 1.

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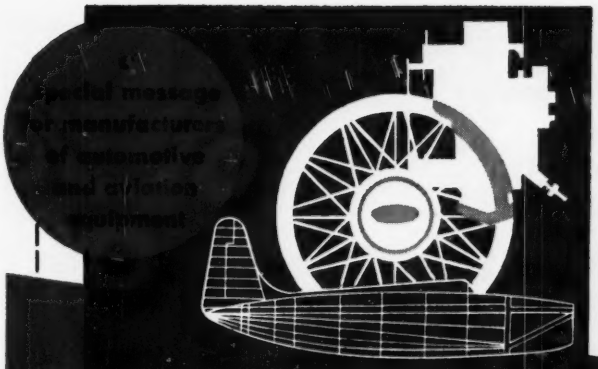

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ON MAGNESIUM Iridite provides a highly protective film in deepening shades of brown. No boiling, elaborate cleaning or long immersions.

AND IRIDITE IS EASY TO APPLY. Goes on at room temperature by dip, brush or spray. No electrolysis. No special equipment. No exhausts. No specially trained operators. Single dip for basic coatings. Double dip for dye colors. The protective Iridite coating is not a superimposed film, cannot flake, chip or peel.

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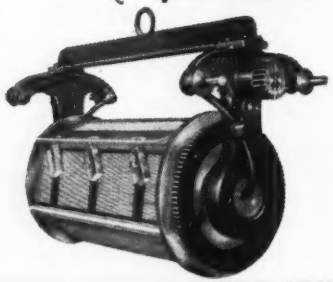

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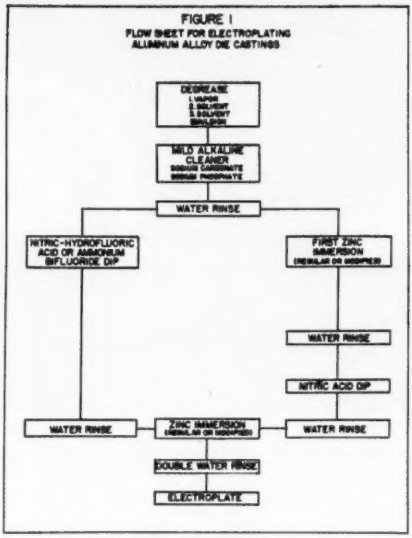
FIGURE 1
FLOW SHEET FOR ELECTROPLATING ALUMINUM ALLOY DIE CASTINGS



Copper may be plated over the zinc immersion deposit from the following solution:

Copper cyanide	5.5	oz./gal.
Total sodium cyanide	6.5	"
Sodium carbonate	4.0	"
Rochelle salt	8.0	"
Free sodium cyanide (max.)	0.5	"
pH	10.2—10.5	
Temperature	100—110	deg. F.
Current density	12-20	amp./sq. ft.

Brass may also be plated over the zinc immersion film from standard brass plating solutions, but other metals are best plated over a copper strike plate rather than directly on the zinc film.

Aluminum alloys containing high percentages of magnesium offer some difficulty to electroplating, but best results are obtained by use of the double immersion procedure using

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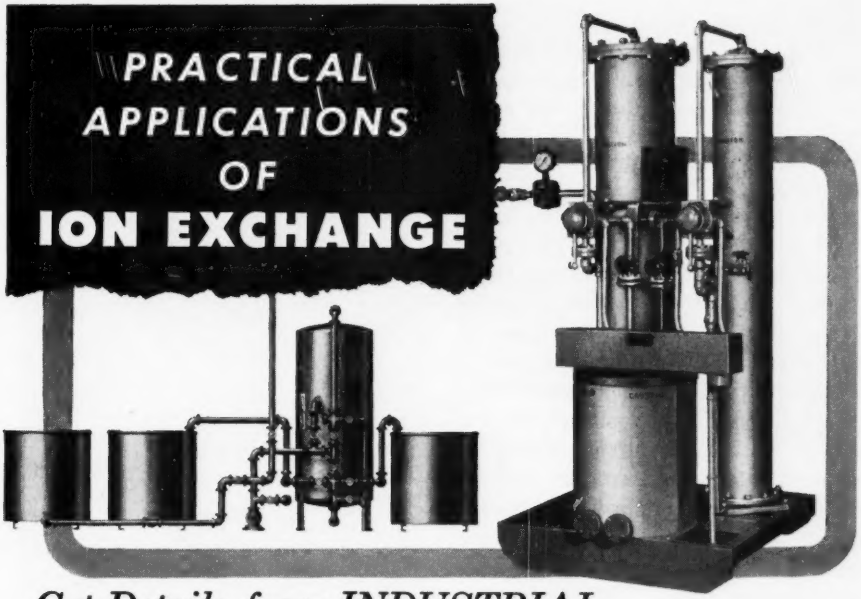

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the modified zinc immersion solution. A more detailed treatment of the zincate solutions and their modifications will be found in the summary of the article by G. W. Zelley (which is reviewed further on in this section).

Barrel plating procedures have been successfully applied to the plating of aluminum die castings. Both in still and barrel plating, precautions must be taken not to damage the zinc film before plating starts. This requires use of the correct temperatures and compositions in the plating baths. The current should be applied before the parts are immersed in the plating solution. Figure 2 shows some plated aluminum die cast parts which have been produced commercially.

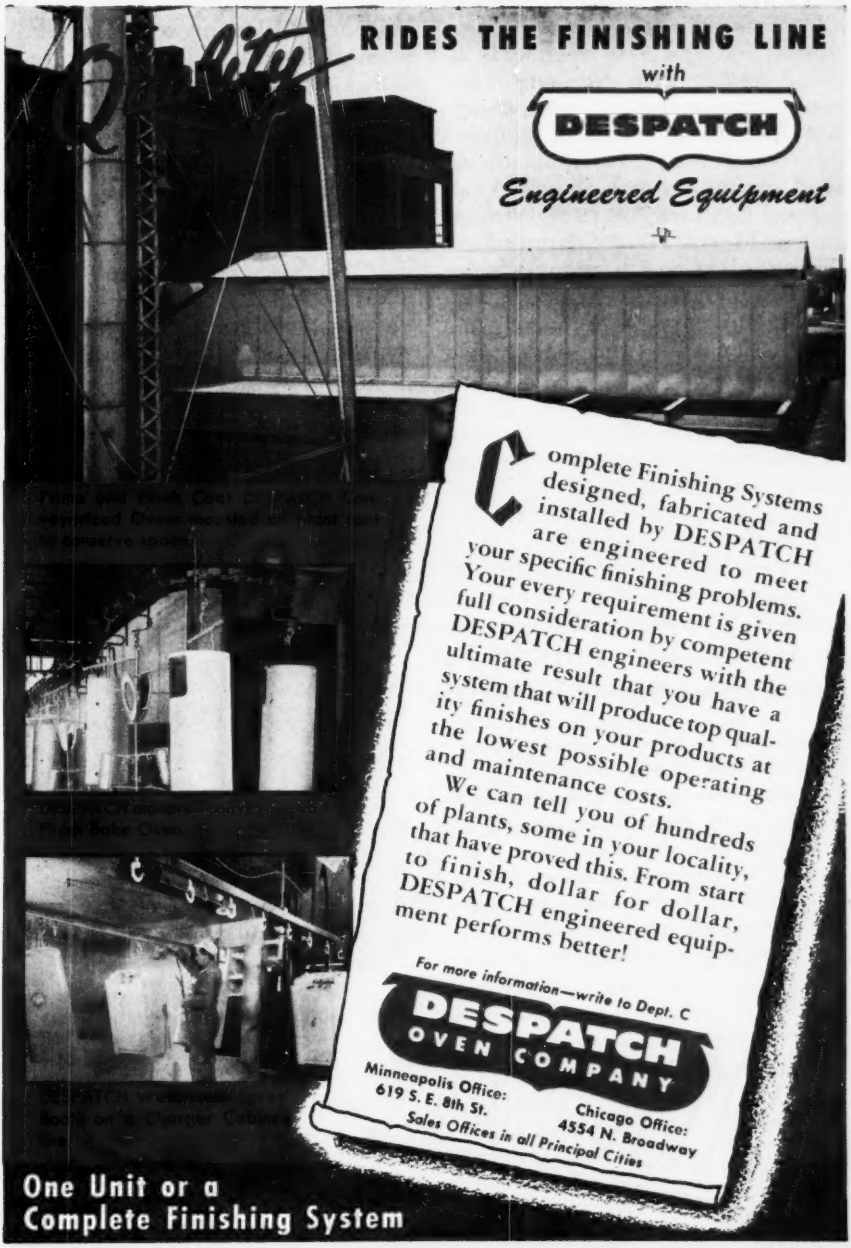
Fig. 2—Applications of plating on aluminum die castings include: hard chrome plate on cylinder bore and pump housing; satin chrome on camera case; bright chrome on spray gun body; and brass on hardware items.

(Photo courtesy Aluminum Company of America, Pittsburgh, Pa.)

Anodic Coatings

Anodic coatings on aluminum serve as corrosion and abrasion resistant surfaces, and also as bases for paint, lacquer, or enamel. Unlike those on wrought alloys, the oxide coatings on die castings do not respond too satisfactorily to coloring. Alloys such as Alcoa A 214 and 218 are more satisfactory for the plain and colored Alumilite* treatments than the alloys with higher silicon content; but even with these, perfect color match and uniformity should not be expected. The high

*Trade Name, Aluminum Company of America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silicon alloys respond well to Alumilite* 705 and 710 treatments to give a coating with excellent corrosion resistance, but a somewhat mottled appearance makes it undesirable for decorative applications. Most of the die cast alloys do not respond satisfactorily to the Alumilite* or Martin Hard Coatings; and alloys containing 7 per cent or more silicon cannot be satisfactorily anodized in chromic acid. Anodizing the high silicon alloys in chromic acid at a maximum voltage of 30 volts and temperature of 90 deg. F. for 45 minutes gives better results than by standard procedures, but the coatings produced are still not comparable to those produced on A 214 or 218 alloys. For best results, it is recommended that aluminum alloy die castings be anodized in sulfuric acid, and the coating sealed in potassium dichromate solution. Figure 3 shows some anodized die cast aluminum parts.

Organic Coatings

A wide variety of enamels and lacquers, ranging from polychrome and wrinkle finishes to gloss white coatings, are used on aluminum alloy die castings. One of the most important considerations for successful application of organic coatings is the pretreatment of the metal surface. Roughening by sand or grit blasting is not necessary for good adherence of the coating. Equally good adherence and better final appearance can be obtained by proper chemical treatment of a smooth surface. After thorough degreasing, the surface must be etched, either in acid solu-

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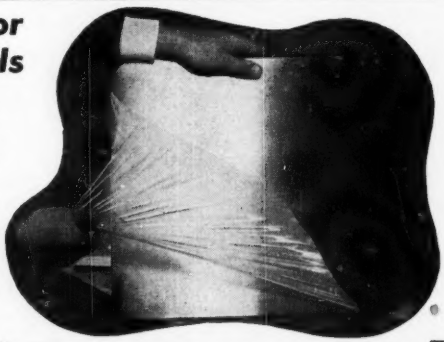

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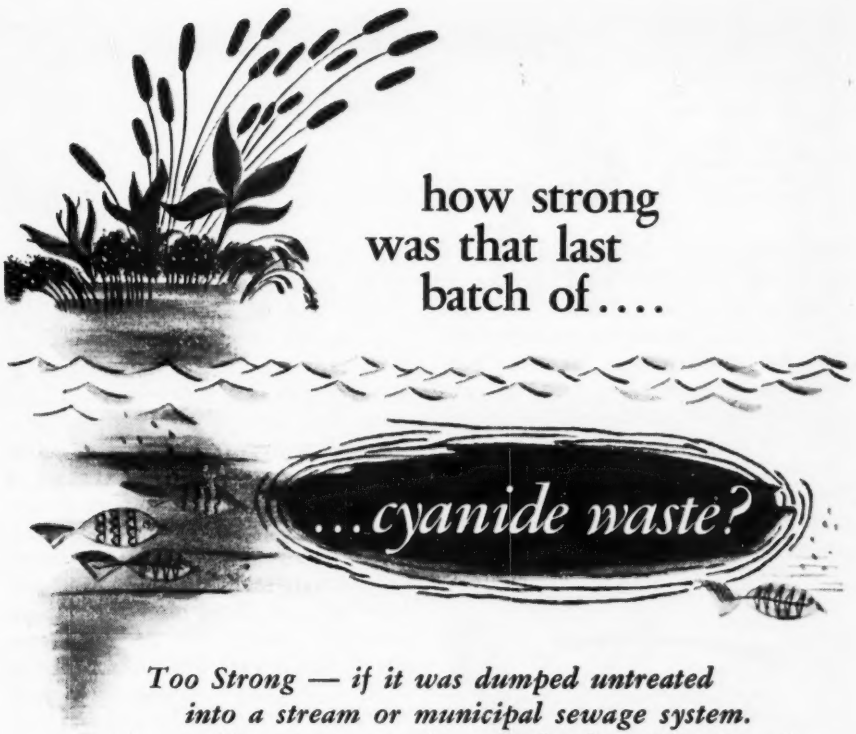

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Fig. 4 — Household appliance component, such as this control box for an automatic washer, is an aluminum die casting with baked enamel finish.

(Photo courtesy Aluminum Company of America, Pittsburgh, Pa.)

tion containing phosphoric or chromic acid, or in one of a number of alkaline etching solutions. For applications involving severe exposure, the die casting may be anodized, preferably in sulfuric acid, to provide an anodic coating as an undercoat. It is the properties of the undercoat or surface film under the lacquer or enamel which are important in preventing peeling in the event of rupture of the organic coating. After the surface treatment has been applied it is desirable to thoroughly dry the die casting by heating for 30 minutes at 225 deg. F. before applying the final coating. Where primers are required, zinc chromate rather than lead pigments are recommended, since the latter may induce galvanic corrosion of the aluminum if the lacquer or enamel above it should fail. Vitreous enamels have not proved satisfactory as a finish for aluminum die castings because their high firing temperature, about 950 deg. F., produces blisters on the surface of the casting. Figure 4 shows an aluminum die casting finished with a baked enamel for use on a home appliance.

Fig. 3—Applications of anodizing on aluminum die castings include the following Alumilite finishes: black on aircraft instrument and gun parts; red on fishing rod handle and spectacle frames.

(Photo courtesy Aluminum Company of America, Pittsburgh, Pa.)

Formation of Immersion Zinc Coatings on Aluminum

THE zinc immersion process is a successful procedure for plating on aluminum. A study of the mechanism of this process, in connection with its relation to the corrosion resistance of the plated aluminum parts is reported by W. G. Zelley in J. Electrochemical Society 100, 328 (1953).

The author points out that in many environments zinc is anodic to aluminum and therefore protects both the aluminum and the electro-

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deposit. This results in undercutting of the plate with subsequent blistering according to the corrosion mechanism suggested in Fig. 5. The undercutting and blistering of the deposit which results from this corrosion mechanism is shown in Fig. 6, which is a photograph of the cross-section of a grooved and corroded sample.

The following conclusions on the performance of plated aluminum may be drawn from the above mechanism:

1. The thinnest practicable zinc film produces the best corrosion results, because it permits the least lateral penetration before the throwing power is exceeded.

2. Those aluminum alloys with the lowest solution potentials provide the most corrosion-resistant plated

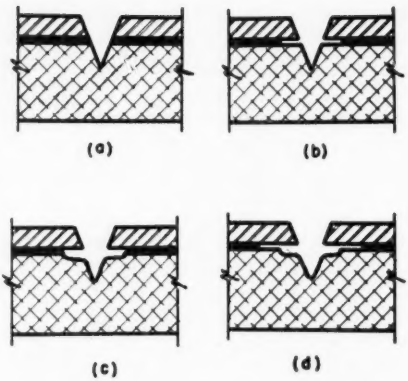

Fig. 5—Corrosion mechanism of aluminum plated by the zinc immersion process. (a) Shows a grooved cross-section in which the electroplate, the zinc, and the aluminum are all exposed to the corroding environment. In (b) the zinc has sacrificially protected the aluminum until the throwing power of the reaction has been exceeded. At this point, (c), aluminum dissolves, sacrificially protecting the deposit, until more zinc is exposed, at which point, (d), the cycle begins again.

(Illustration courtesy The Electrochemical Society, New York, N. Y.)

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products. The 24S alloy should be better in this respect than the 2S alloy.

3. Attack would be more rapid and blistering earlier with small cracks than with large ones. Therefore, highly stressed plates which may develop very fine cracks should be avoided.

4. Any modification of the immersion deposit which decreases its rate of anodic solution would be beneficial.

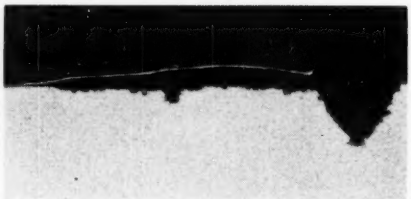


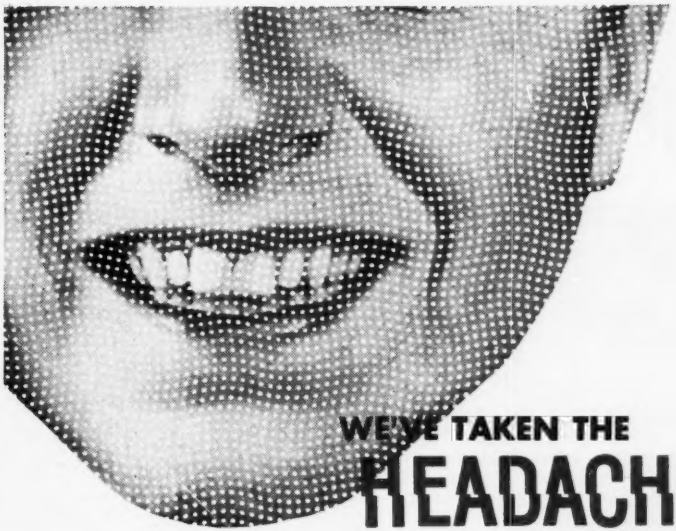
Fig. 6—Cross-section through grooved plated panel after salt spray exposure. Shows undercutting and lifting of the deposit (20X). The plate which has lifted appears as a white line above the base metal.

(Illustration courtesy The Electrochemical Society, New York, N. Y.)

Zelley considers the potential difference between the zinc and the aluminum in a given immersion bath as the most important property which determines the weight and character of the zinc coating. The potential, in turn, largely depends upon two factors: the aluminum alloy used; the surface conditioning treatment used on that alloy. In alkaline immersion baths the zinc deposit produced on the 2S alloy will be heavier than that produced on the 24S-T3 alloy because of the greater potential difference with respect to zinc possessed by the 2S alloy.

In varying the treatment of a given alloy, 2S for example, it is found

to page 74→



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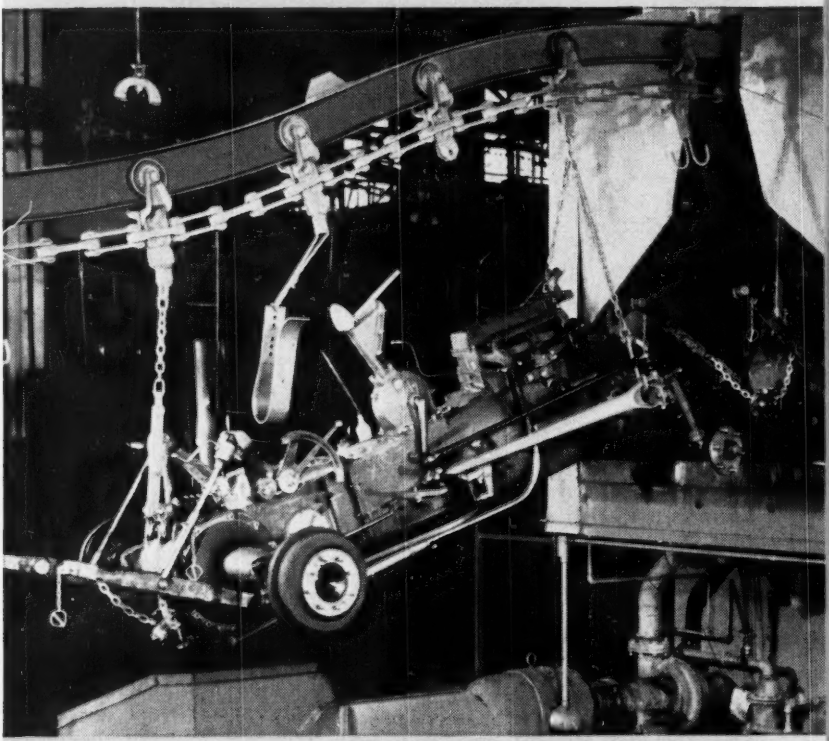

View of Ferguson Tractor assembly line, showing chassis entering two-stage washing machine. Heat retained by the metal surfaces from this washing and drying assists in drying the paint film, which is applied later.

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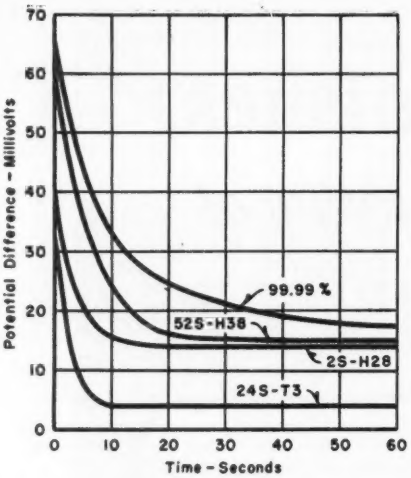


Fig. 7—Potential difference between various aluminum alloys and high purity zinc in a solution of 500 g NaOH per liter and 100 g ZnO per liter. *(Illustration courtesy The Electrochemical Society, New York, N. Y.)*

that the double immersion treatment produces a surface with a lower aluminum-zinc potential difference and a lighter zinc deposit than does a mild alkaline cleaning. The latter produces a lower potential difference than does solvent degreasing. In Fig. 7 are shown the approximate relative potential differences between zinc and various aluminum alloys in a typical zinc immersion solution, and in Fig. 8 are shown the potential differences between zinc and a particular alloy (2S-H28) which has had various pretreatments.

The most desirable immersion zinc deposits, which are neither pure zinc nor continuous films, may be characterized by chemical analysis and by surface resistance measurements. The thinner films show low

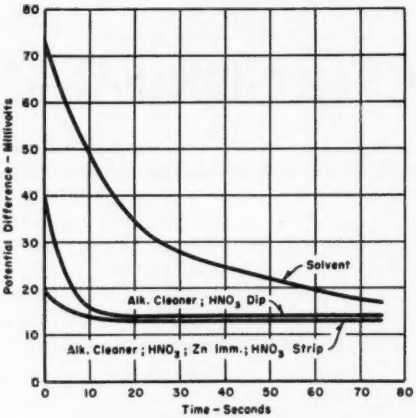


Fig. 8—Potential difference between 2S-H28 with various conditioning treatments and high purity zinc in a solution of 500 g NaOH per liter and 100 g ZnO per liter. *(Illustration courtesy The Electrochemical Society, New York, N. Y.)*

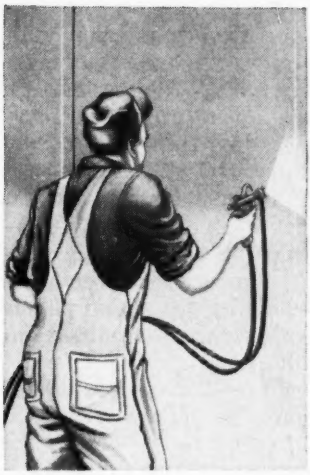
zinc content and high surface resistance as shown in Table II.

Time and temperature of immersion also affect the weight of zinc deposited, and it is recommended that these variables be maintained as low as practicable.

Table II

EFFECT OF THE CONDITIONING TREATMENT ON THE ZINC IMMERSION FILM ON 2S-H28 TREATMENT

	Coating Wt. mg./sq. dm.	Zn Content %	Resistance microhms
Electrodeposited zinc	—	—	5
Solvent cleaned, 30 sec. Zn immersion	15.8	93.8	10
Alk. cln., HNO_3, dip, 30 sec. Zn immersion	5.3	83.0	15
Alk. cln., HNO_3, dip, double 30 sec. Zn imm.	2.5	72.5	70



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Modifications of the Immersion Solution

The author believes that although the usual zinc immersion solution gives satisfactory results in most cases, certain modifications* are desirable in some instances. For example, the double immersion procedure is not completely satisfactory with alloys containing magnesium or magnesium silicide. Also on the 2S alloy the double immersion procedure may sometimes reduce the weight of the zinc coating to so low a level that it is not sufficient for subsequent plating. Zelley states that the addition of ferric chloride, with tartrate to keep it in solution, improves the usual immersion solution. Not only is the plating of magnesium-containing alloys and die castings made less critical, but coverage on all alloys is improved. Further, the modified immersion process is said to improve the corrosion resistance of most of the alloys (except 24S and 75S). Figure 9 demonstrates the improved corrosion resistance of plated aluminum panels which results from the modified immersion solution.

The recommended composition of the solution is the following:

Sodium hydroxide	500 g/l
Zinc oxide	100 g/l
Ferric chloride crystals	1 g/l
Rochelle salt	10 g/l

An excess of ferric chloride is undesirable, because it may cause blistering of the electrodeposit. For al-

* The modified zinc immersion procedures are the subjects of pending patent applications.

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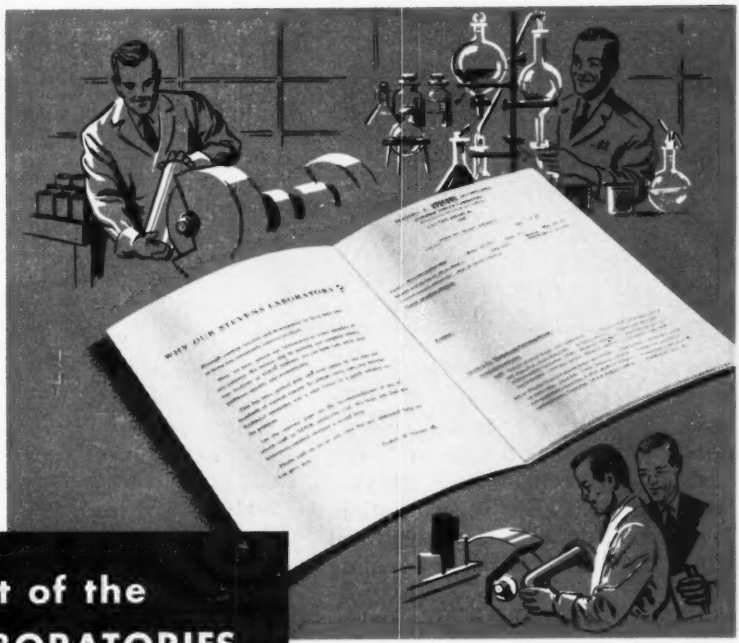

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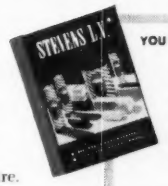

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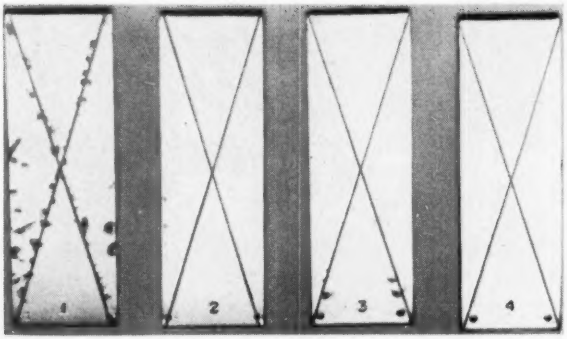

Fig. 9—Panels prepared with regular and modified zinc immersions after 300-hour exposure to salt spray. Panel 1, 3S-H16 regular immersion, bright nickel; panel 2, 3S-H16 modified immersion, bright nickel; panel 3, 61S-T6 regular immersion, Watt's nickel; panel 4, 61S-T6 modified immersion, Watt's nickel.

(Photo courtesy The Electrochemical Society, New York, N. Y.)

loys high in magnesium, the tartrate may be increased to 100 g/l. The modified solution is best used as a double immersion treatment.

Another modification of the zinc immersion baths is their dilution. While excellent results are obtained from the usual baths containing about 400 to 500 g/l sodium hydroxide and 80 to 100 g/l zinc oxide, their high viscosity causes appreciable dragout losses and renders them rather difficult to rinse. More dilute solutions may be used and satisfactory results obtained, but surface preparation must be especially thorough, time and temperature carefully controlled, and all precautions necessary to keep the weight of deposited zinc low must be taken because the weight of the coating tends to increase as the solution is diluted.

Zelley further recommends that the ratio of sodium hydroxide to zinc oxide be increased as the solution is diluted. He lists the following formulas as commercially practical:

	A	*B*	*C*
Sodium hydroxide	400 g/l	120 g/l	50 g/l
Zinc oxide	100 "	20 "	5 "

and prefers composition B if a dilute bath is to be used.

The following is the recommended composition of a dilute modified bath.

Sodium hydroxide	120 g/l
Zinc oxide	20 g/l
Ferric chloride crystals	2 g/l
Rochelle salt	50 g/l
Sodium nitrate	1 g/l

The sodium nitrate can reduce the coating weight by 30 to 50 per cent and must not be used in excess or it may inhibit the deposition of the zinc. In the concentration indicated it is a valuable aid in keeping down the weight of the coating.

Performance of Plated Aluminum

The author points out that on the basis of a large number of exposure tests, 24S-T4 aluminum plated with 0.0015 inch nickel and decorative chromium can be expected to withstand exposure of at least three years in an industrial atmosphere. No special precautions are needed during the zinc immersion treatment

New 3-in-1 Honite Compound cuts burnishing costs up to 50%!

NEW MULTI-BURNISH COMPOUND

"Multi-Burnish" can be used with almost any metal, and with all types of barrel finishing media. It is completely soluble, making for free rinsing. Parts *always* come out with a high luster and clean surfaces.

New HONITE "Multi-Burnish" can *cut your burnishing costs in half* because it does the work of three or four ordinary barrel-finishing compounds, *and* produces brighter surfaces faster than ever before possible!

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Honite BRAND

Made in U.S.A. by Minnesota Mining and Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Brand Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Scotchlite" Reflective Sheeting, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 122 E. 42nd St., New York 17, N.Y. In Canada: London, Ont., Can.

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1. During the first part of its operating cycle, HONITE "Multi-Burnish" is a powerful cleaner that deburrs rapidly for 20 to 40 minutes.

2. In its second phase, "Multi-Burnish" Compound develops progressively richer suds which act both as a lubricant and a suspending agent, resulting in high luster and brilliant color on the work pieces.

Minnesota Mining & Mfg. Co.
Dept. PF-34, St. Paul 6, Minn.

☐ Yes, I'd like a FREE demonstration of HONITE "Multi-Burnish" Compound.

☐ Send me free copy of booklet "Barrel Finishing Manual" which contains complete information about HONITE barrel finishing compounds.

Name.....Title.....

Company.....

Address.....

City.....Zone....State.....

when using this alloy because of its inherently good properties with respect to corrosion resistance.

By application of the principles indicated in this paper, the author reports that less favorable alloys, such as 2S, showed equal corrosion resistance when plated in a similar manner, and that other tests showed that plated aluminum compares favorably with plated brass, steel, and zinc samples after three years exposure. Plated die castings, particularly alloy 380, can be expected to withstand at least one year exposure in an industrial atmosphere provided the plated finish is applied according to the best known methods.

LAPINE INSPECTION BULLETIN. A unique bulletin listing a diversified selection of equipment designed for high standard inspection has been prepared by **Arthur S. La Pine & Co.**, 6001 S. Knox Ave., Chicago 29, Ill. Especially compiled to meet the needs of inspection departments in plants, laboratories and generally throughout industry, this bulletin, consisting of 8 pages, illustrates and fully describes the newest developments in scientific inspection aids including Stereomicroscopes, illuminating magnifiers, micro-lights, a complete variety of magnifiers, pocket microscopes, comparators, miniature lamps and many others. More than 80 different items, all carefully selected to help speed production and maintain highest standards in quality control operations, are systematically arranged for helpful and easy reference.

TORRINGTON BRUSH CAT. NO. 30. A completely illustrated catalog of over 400 brushes of all sizes and types used by industries, institutions and municipalities has been issued by **The Torrington Brush Works, Inc.**, Torrington, Connecticut. The catalog lists floor, bench, counter, paint, wheel, varnish, oil, chip, glue, stencil, platers', molders', textile, sanitary, street and scrub brushes.

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Operator controlled tracking and belt tension.

Saves belts. Does not twist belt or break bond.

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Tracks ¼" to 6" wide belts—perfectly.

Balanced, 10" steel Idler Pulley, 5" wide, with closed ends.

Grease packed, heavy duty Seal Master ball bearings.

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Float your water-wash spray-booth troubles away with...

NEW Wyandotte "FLOTE"

A versatile, highly efficient *spray booth* product which eliminates tackiness and sinking paint sludge . . . prevents clogging and paint build-up in water-wash spray booths.

Whatever organic finishes you use, no matter what type water-wash spray booth you employ, new Wyandotte "FLOTE" will reduce your operating problems and cut maintenance costs.

New Wyandotte "FLOTE," floats even heavy primers and handles all paints at *low* concentration.

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- Prepares metal for paint
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New • EQUIPMENT • MATERIALS • PROCESSES

Peelable Plastic Spray Booth Film Coat

Peel Filmite, described as a revolutionary type spray booth paint film coat, has been announced by The Du Bois Co., Inc., Cincinnati 3, Ohio, and Los Angeles, manufacturer of cleaning compounds for industry.

Peel Filmite is a fireproof and flameproof peelable film.

Peel Filmite is used with regular spraying equipment and has excellent resistance to alkalis, acids, oils, grease, fats, alcohol and gasoline. It protects against sub-film rusting.

The new film sprays on easily and evenly. Its uniform white, opaque coating dries on an average in 10 minutes. The paint spray operator can work as soon as it is dry. Booth gets a firm, non-greasy surface. Heat will not cause it to sag or drip. When paint overspray accumulates, the operator scores the coating and peels it off in big sheets.

Morey Process Hard Chrome Plating Unit

Features of the Morey Process for precision hard chrome plating have been made available through the development of a package precision hard chrome unit by Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich.

All equipment needed for a complete hard chrome department is furnished: six tanks, lead and neoprene tank linings, five rectifiers, a fume separation system, heat and timing controls and

electrical connections ready for immediate installation. An intensive course of instruction in the advanced phases of precision plating is offered as a part of the process.

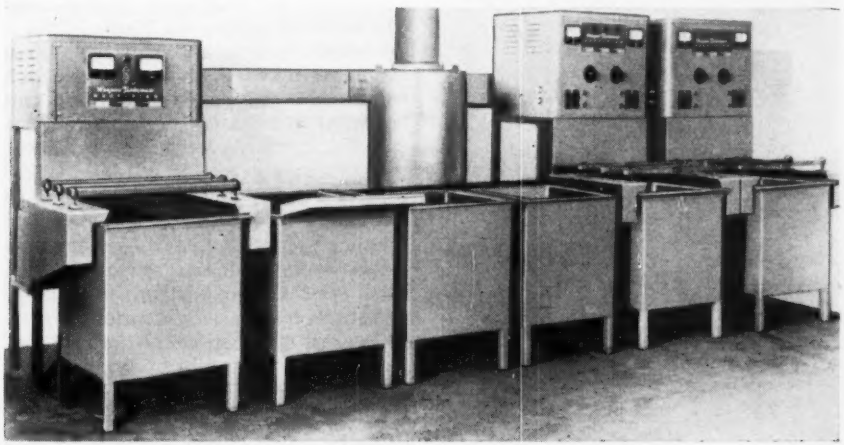
Based on the Morey Process, this equipment can accomplish precise deposition of chrome plate.

Because of its inherent advantages of hardness and low coefficient of friction, chromium is widely used as an economical and positive means of increasing service life of parts subject to wear and abrasion. Undersize tools and parts are easily restored to their original print dimensions. Among the parts most commonly plated are: taps, drills, reamers, bushings, dies, gages, valves, shafts, and gears.

Exclusive features of this equipment cited by the manufacturer are: an automatic electric heat control and timing system which assures precision of plate deposition and makes grinding and lapping to size unnecessary; individually controlled Wagner Rectifiers which permit two separate jobs to be plated at once, in the same tank; a built-in air purifying unit which removes harmful chemical fumes from the plant atmosphere and brings in clean air; and a special, long-life solution with an exclusive catalyst.

Wagner Brothers, Inc., offers to plate any reasonably sized sample without obligation in support of its claims.

Folder F 30-54 available on request.



Hard Chrome Plating Unit.

Cabinet Oven

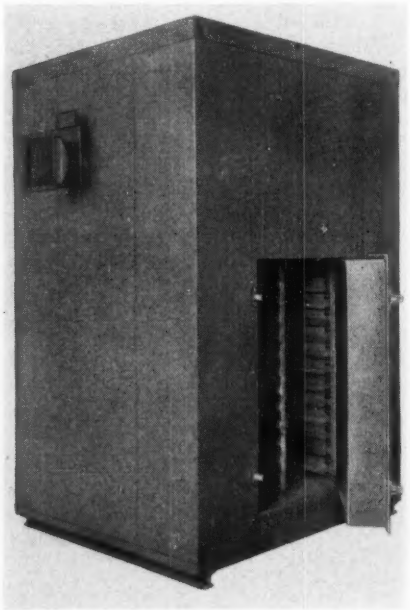
An electrically heated, cabinet type oven, designed with an inside working space 3 ft. wide by 4 ft. deep by 4 ft. high, and equipped with two tiers of rack angles to accommodate 24 trays of material to be dried, is available from W. S. Rockwell Co., 2904 Eliot St., Fairfield, Conn. The overall dimensions of the oven are 8 feet, 6 inches wide (including fan drive and fresh air filter), by 5 feet, 4 inches deep, by 9 feet, 1 inch high, to oven roof.

The oven is built of standard Gehnrich dual panels with eight inches of insulating block and glass wool blanket insulation. The entire inner face of the oven is of Type 304 stainless steel and the outer face of aluminized sheet steel.

Eighteen Nichrome electric heating elements are arranged in four rows in the oven section above the drying chamber. A stainless steel fan, V-belt driven by a totally enclosed motor mounted on one oven wall, pulls air through the fresh air filter, across the electric heaters and then down into a space at the right inside of the oven whence it moves through a panel type alloy filter, across the trays, through another alloy filter and back to the heating chamber and fan for recirculation. Such cross flow circulation assures uniform drying of the product.

Temperature within the oven is automatically controlled by a signalling type controller. An airflow switch shuts off the fan, when necessary.

Control is stated to assure drying within close temperature limits and under completely safe operating conditions. Possible temperature range of the oven is from 200 to 1000 deg. F.



Cabinet Oven.

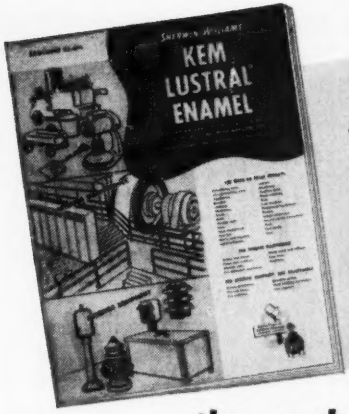
Epoxy Type Resin

An epoxy type electrical insulation resin with a useable life of from three to five days before setting up has been introduced by Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Called "Scotchcast" electrical insulation resin No. 3, the product, which comes in a two-part liquid form, can be cured in from two to four hours at 250 deg. F. with a longer cure at lower temperatures.

As a result, the resin is expected to find wide application in the electrical manufacturing industry — especially where production line techniques call for a resin that can be mixed in large quantities for use over a period of days.

Typical applications of the new material are for embedding resistors, unitized electronic circuits, pre-amps, torroids, and audio and power transformers — hermetically sealed — in a solid block of resin to provide trouble-



AIR-DRY OR BAKE

SPRAY, DIP OR BRUSH

FOR PRODUCT FINISHING
AND INDUSTRIAL MAINTENANCE

Get these facts on KEM LUSTRAL®

...the modern multi-purpose enamel!

Here's the versatile finishing material industrial users asked for—KEM LUSTRAL—*one* top-quality enamel that gives you all these advantages . . . and more—

—will air-dry or bake

—may be brushed, sprayed or dipped

—has outstanding durability, gloss retention and weather resistance—interior or exterior

—does double-duty as a product finish or for maintenance painting

—gives lasting protection for wood or metal.

KEM LUSTRAL is one of a complete line of industrial quality product finishes available through Sherwin-Williams Branches in all principal cities. Consult your classified telephone directory for location of Branch nearest you. Ask for a copy of KEM LUSTRAL Brochure KL-511. Or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

Services of trained industrial finish specialists available in your area through nearest Branch

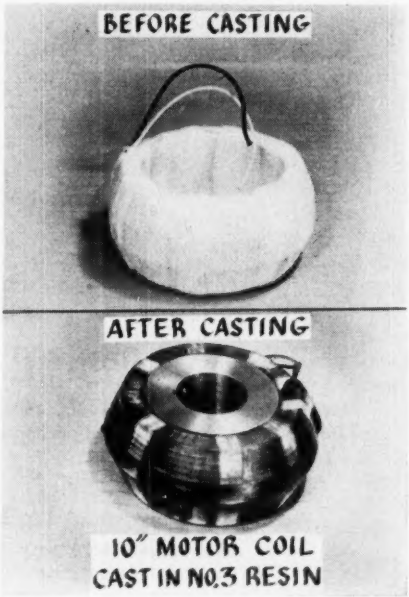
SHERWIN-WILLIAMS

INDUSTRIAL FINISHES

free operation under adverse conditions. Because of its low viscosity, it is recommended for impregnation of coils where increased resistance to moisture is desired—rather than conventional varnish-impregnated paper and cloth insulation.

Among the features of Scotchcast resin No. 3 are its 100 per cent solids nature with a minimum of shrinkage upon curing; no chemical degradation within the operating range from -65 to 250 deg. F.; resistance to acids, alkalies, solvents and oils, and excellent adhesion to most metals, plastics and conductors.

Electrical characteristics include a dielectric strength of from 1,000 to 1,500 volts per mil on thin sections, a lower dissipation factor over a wide temperature range at frequencies of 60 cycles to 30 megacycles, and a stable dielectric constant within this range.



Coil impregnated with Scotchcast resin No. 3.

A bulletin covering the properties and use of "Scotchcast" electrical insulation resin No. 3 is available.

DIXRIP
fine wire
SCRATCH BRUSHES
SINCE 1856

For Platers, Silversmiths, Jewelry Mfgrs., Makers of Watches, Clocks and Electronics and other metal finishers.

Supplied in straight or crimped brass, steel, nickel silver or stainless steel wire in sizes .0025 to .006 and in bristle, fibre or Nylon. Special sizes and shapes to order.

catalog and price list. Write (Dep't. P) on your letterhead for

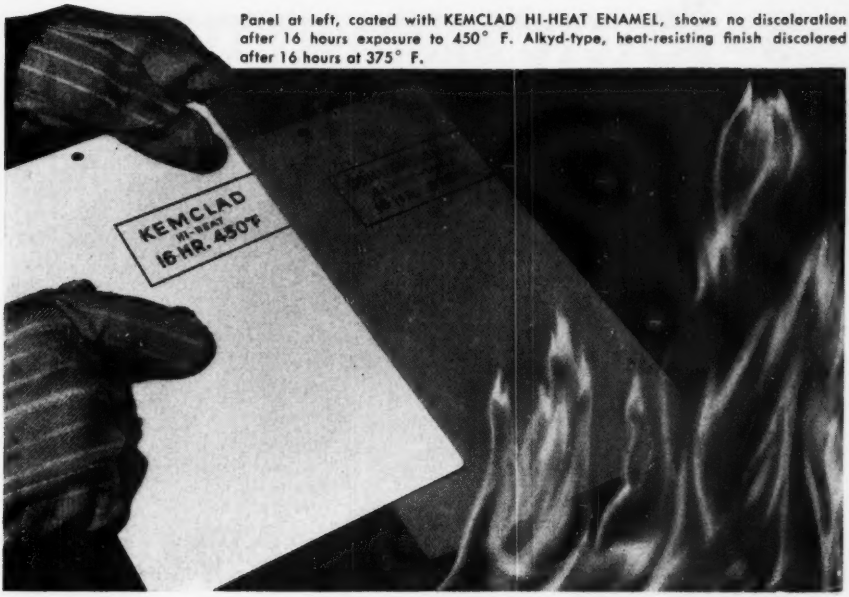
DIXON & RIPPEL, INC. KINGSTON, N. Y.
ESTABLISHED 1856

Zero-Mist Chromium Bath Additive

Zero-Mist, a product of the research staff of The Udylite Corp., Detroit 11, Mich., is a surface active agent which prevents air contamination from chromic acid spray and mist.

The development is described as "a control within the solution." It is therefore not dependent for its effectiveness on a heavy foam blanket.

Stable and virtually indestructible, Zero-Mist is not affected by concentrated chromic acid solutions at any temperature or by the highest anode



Panel at left, coated with KEMCLAD HI-HEAT ENAMEL, shows no discoloration after 16 hours exposure to 450° F. Alkyd-type, heat-resisting finish discolored after 16 hours at 375° F.

NOW... new HIGH heat resistance at new LOW cost! with KEMCLAD® HI-HEAT ENAMEL

... a new achievement of Sherwin-Williams Industrial Research that opens the way to new savings in appliance finishing

Providing heat resistance approaching that of straight silicone enamels at approximately half their cost, KEMCLAD HI-HEAT ENAMEL offers important new advantages to builders of appliances and many other products.

The result of more than four years of research, this unique development combines more of the desirable properties of silicones with the basic advantages of the best organic coatings than has previously been possible except at excessive cost. A high-gloss, high-quality coating, it withstands sustained temperatures to 500° F. Flexibility, adhesion, resistance to hot grease exceed that of best conventional heat-resistant finishes.

For full details, contact your Sherwin-Williams Industrial Representative, or write The Sherwin-Williams Co., General Industrial Division, Cleveland 1, Ohio.

SHERWIN-WILLIAMS
INDUSTRIAL FINISHES

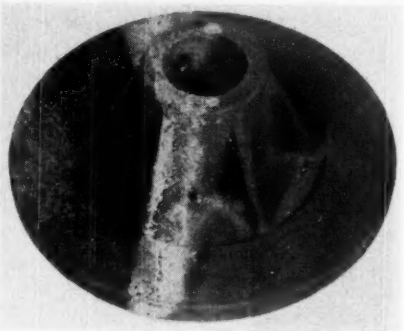
or cathode current densities obtainable. In addition to eliminating mist and spray, Zero-Mist also reduces film dragout up to 50 per cent by virtue of its ability to lower the surface tension of the chromium plating solution.

By means of its chemical characteristics, the new product reduces rinsing requirements and chrome staining of parts.

Zero-Mist is easy to control, and requires only small weekly maintenance additions to replace dragout losses.

Phosphate Cleaners

A group of phosphoric acid type cleaners intended mainly for products that are too large or heavy to be phosphate coated with normal production methods, and for manufacturers whose production does not warrant production equipment for phosphate cleaning,



A 12-month accumulation of rust and dirt was removed from this casting by use of an 800 Series Phosphate Cleaner.

has been developed by the Detrex Corporation, Box 501, Detroit 32, Mich., producer of industrial cleaning equipment and chemicals.

To be especially compounded, upon recommendation of Detrex field service engineers, in order to meet the particular requirements of each installation, the 800 Series Phosphate Cleaners are reported to meet every government specification for this type of product.

The 800 Series can be applied by any practical method, by means of brush, sponge, dipping, or flowing on, and can be specified to incorporate such properties as detergency, oil solvency, rust and scale removal. The cleaners deposit a fine grained crystalline structure of iron phosphate that becomes chemically interlocked with the metal. Paint flows into the microscopic crevices contained in the iron phosphate coating and is locked, thus retarding peeling and flaking, preventing corrosion, and virtually eliminating blistering.

IS
YOUR
PROBLEM
BURNISHING?
HOLLAND SUGGESTS:
Motor Driven Tilting Tumbling Barrels for cleaning, polishing, grinding, deburring, sanding, burnishing and various other applications.
WRITE for New Holland Equipment Catalog
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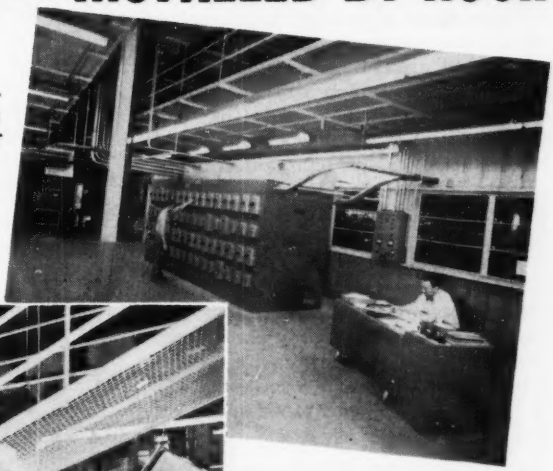
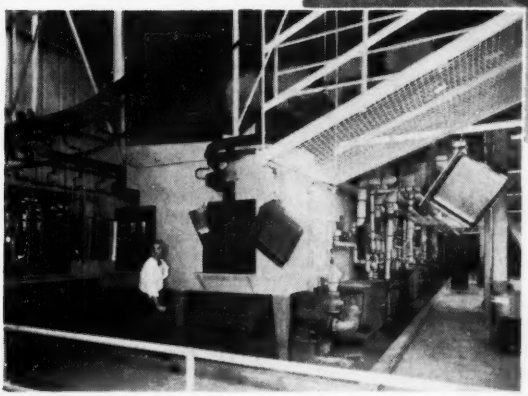
274 SOUTH NINTH STREET • BROOKLYN 11, N. Y.

COMPLETE FINISHING SYSTEM at G.E. ENGINEERED and INSTALLED BY KOCH

● Main control center operates complete system at GE Range and Water Heater division plant.





● Ware entering double-tunnel 6-stage phosphatizing machine.

In this General Electric Co. installation at Appliance Park, Ky., KOCH furnished a double-tunnel phosphatizing machine, double-tunnel dryoff oven, 2-color flow coat machine, 2 electrically-heated baking ovens, conveyors, air replacement system and the complete finishing department enclosure.

To insure peak efficiency in your complete finishing system, consult KOCH finishing experts. KOCH engineering and single responsibility will pay dividends from the day your system is installed.

PHONE, WIRE OR WRITE TODAY!

GEORGE KOCH SONS, INC.
EVANSVILLE, INDIANA

Impregnators for Casting Sealing Process

Fabrication of special impregnators for sealing microporosity in cast electronic and aircraft parts with styrene base material, varnish or wax, has been reported by L. O. Koven & Bro., Inc., 154 Ogden Ave., Jersey City 7, N. J.

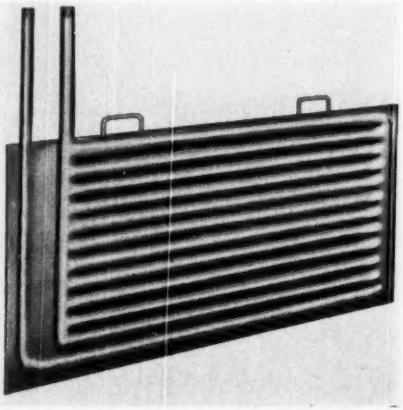
Castings to be impregnated are loaded into baskets and lowered into the vacuum chamber of the impregnator. The chamber is evacuated, thoroughly de-aerating the castings. Impregnating solution is pumped into the tank and pressure of 100 p.s.i. is applied and maintained long enough to assure complete penetration of the solution. Impregnation completed, excess solution is flushed out through pipes in the bottom of the tank.

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

Thermo-Panel Plate Coil

Dean Products, Inc., 616 Franklin Ave., Brooklyn 38, N. Y., manufacturer of heat exchange equipment, has announced the formation of the Thermo-Panel Division of the company to market a plate-type coil. Simple to clean and easily installed, Thermo-Panel Plate Coils provide efficient heat transfer and are available in standard sizes,



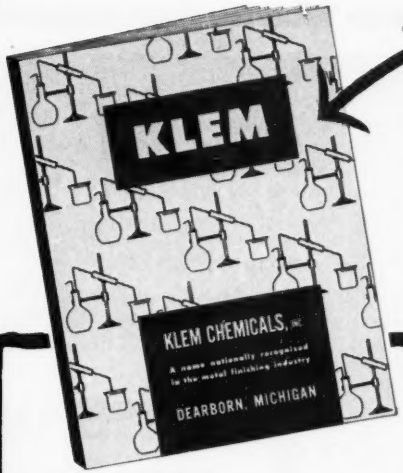
Thermo-Panel Plate Coils

as well as special sizes and shapes to meet individual requirements. They are obtainable in a wide range of materials, including stainless steel, monel and other special alloys and finishes, and are available in parallel-type for steam application, or in a series-type for use with cooling or heating fluids.

Detailed information bulletin No. 202 available on request.

Electroplating Rectifier

A versatile electroplating rectifier recently was developed by Wagner Brothers, Inc., 432 Midland Ave., Detroit 3, Mich.



Write for this catalog — describes 31 standard surface preparation chemicals, electrolytic and emulsion cleaners, one stage strippers, etc.

Your difficult surface cleaning problem may be a "pushover" for the experts

Klem Field Engineers are specialists in the cleaning and preparation of parts surfaces, qualified to solve most problems on the spot — backed by lab facilities that duplicate your plant conditions and where a quick answer may be had on the particularly tough jobs.

You'll like working with Klem. They'll get results for you and make your work easier.

There's a KLEM engineer near you

KLEM CHEMICALS, Inc.

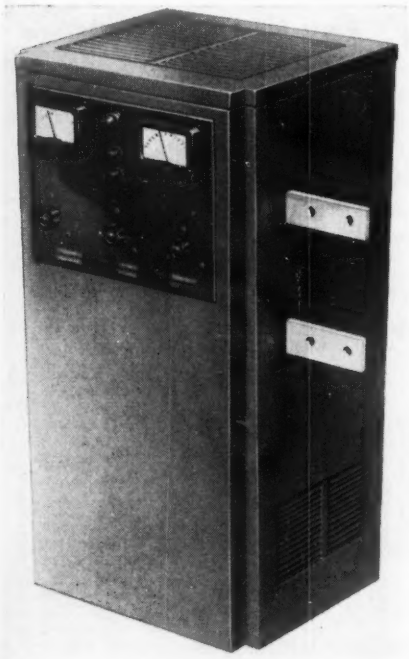
14401 LANSON AVE., DEARBORN, MICHIGAN

Designed to accommodate any application requiring a positive source of continuously smooth d.c. current, at capacities from 5 to 50,000 amperes, the rectifier is available in five basic models: Large Package Unit, 2,000 to 50,000 amps; Water Cooled, 1,500 to 50,000 amps; Small Package Unit, 250 to 2,000 amps; Cubicle, to 2,000 amps; and Bench Type, 5 to 200 amps.

Wagner Brothers Rectifiers are conservatively rated, 3-phase circuit, selenium type rectifier stacks connected for 5 per cent ripple. Their compact, lightweight construction makes extra structural supports or foundations unnecessary. They can be connected in series, parallel, or series-parallel for practically any output of direct current power. All units are easily modified to meet plant requirements.

Associated regulators and controls of various types are also obtainable in standard or special designs.

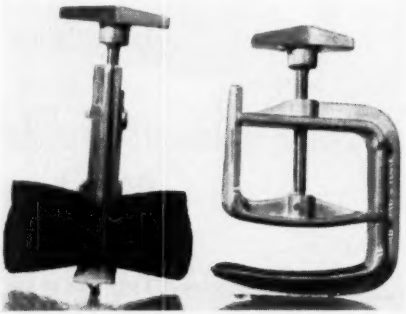
Bulletin B 20-45 available.



Electroplating Rectifier

Camac Hose Valve

The Camac Hose Valve, product of Carl Buck and Associates, P.O. Box 267, Essex Fells, N. J., is designed to meet the need for a simple method of valving where hose is used for the transfer of corrosive liquids.



Camac Hose Valve

The Camac Hose Valve, because of contoured design, will not damage hose and will give a complete shut-off against pressures up to 100 p.s.i. Its light weight places a minimum of drag on the hose. One hand operation is possible and the valve may be put on or taken off hose runs without disturbing connections.

The valve is made of aluminum and bronze and can be used with hose from 1 to 2½ inches ID.

Brass Additive

Jelco Products, 153 E. 26th St., New York 10, N. Y., manufacturer and dis-

cut cleaning costs
RIGHT DOWN THE LINE!

METALWASH VAPOR DEGREASERS are 4-Ways BETTER!

UNOBSTRUCTED TANK WALLS. The condensing coil and trough are recessed into a back compartment providing *superior vapor control, more efficient solvent reclamation,* and an *unobstructed working area.*

WATER SEPARATOR and PUMP CHAMBER, fabricated of stainless steel, are *unitized* for easy removal in minutes.

SIMPLIFIED MAINTENANCE. Service connections, clean-out openings, and controls are located at one end of machine.

DEMAND-TYPE WATER CONTROL. Out of Metalwash research has come the improved technique of water temperature regulation for greater control and water conservation.

All types of vapor degreasers, automatic or hand operated, are available in standard and special sizes.

METALWASH PHOSPHATIZING MACHINES *provide ideal surface for lasting paint finishes.*

METALWASH SPOTLESS DRYER *eliminates hand-wiping of lacquered or plated parts.*

METALWASH TRIPOLI REMOVER *automatically removes tripoli and rouge.*

METALWASH®

WASHING PICKLING DRYING
PHOSPHATIZING DEGREASING

METALWASH MACHINERY CORPORATION
915 North Avenue, Elizabeth 4, N. J.

tributor of metal finishing equipment, has developed an addition agent for brass plating solutions.

Designated as "Brass Additive" the product is said to assist in maintaining an even brass color in the deposit, and will prevent the formation of cyanide and ammonia fumes during the operation of the solution.

Brass Additive can be added to any standard brass plating solution, and is claimed to increase efficiency and throwing power, brighten the deposit, aid in anode depolarization, and make possible faster plating at higher current density.

Tilting Chutes for Twin Barrel Finisher

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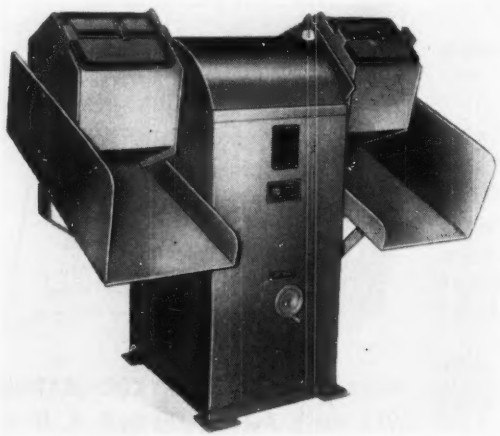
Chutes tilted to the rear, while the machine is in operation, form effective guards around the moving barrels.



Twin Barrel Finisher equipped with Tilting Chutes.

The twin barrels on this finisher have a load capacity of 1.1 cu. ft. each. Barrels are made with the largest possible opening for easier and faster servicing.

The Rampe Twin Barrel Finisher is powered with a ¾ h.p. 220/440 volt 3 phase motor. Barrels may be furnished unlined, or lined with vinyl plastic.

Cement Mortar for Industrial Construction

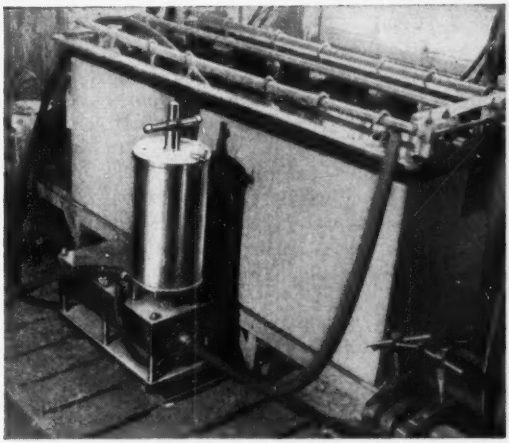
Combining for the first time greater chemical resistance properties, superior physical strength and economy with the stability and non-toxic qualities of ordinary furfuryl alcohol type cements, an all-purpose product under the trade name of new "Pennsalt Furan Cement" has been announced by the Corrosion Engineering Products Department of Pennsalt Chemicals, 1000 Widener Building, Philadelphia 7, Pa.

This new furfural-ketone resin development is highly resistant to acids, alkalies, and most solvents.In addition, tests have established its superior physical strength and longer working life and have proven it to be more economical than conventional alcohol types of furan cements.

Pennsalt Furan Cement is now available in two formulations. Powder S, a siliceous filler, is resistant to acids, except hydrofluoric, solvents, oils, grease, water, steam and mild alkalies. Powder C is a carbon type filler, an effective resistant for broad acid and alkali protection including hydrofluoric acid. Both powders are easily worked and may be handled safely.

Here's how to cut your losses

get better finished plated work — save time and labor



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We manufacture a full line of Mixers and Agitators covering a complete range of sizes, for mixing, blending, and dissolving. Stainless Steel Mixing Tanks are also available in a wide range of capacities. For full details and illustrations write for your free catalog.

Anti-Corrosion Coatings

Manufacturer: Quester, Inc., Trenton and Broomall Sts., Chester, Pa.

Saran vinyl resin-base plastisols are supplied and also applied to chemical processing equipment by Quester, Inc., to resist exhaust gases containing acids, alkalies, moisture and mineral salts and to inhibit rust, blistering and deterioration of metal surfaces. According to the manufacturer, the coating technique eliminates the need for other corrosion protection measures on the surfaces of tanks, heavy castings, fume exhaust stacks, flanged pipe sections, blowers or accessories that are in contact with corrosive chemicals.

Applied in uniform thicknesses from 1/32 to 3/16 inches and then fused to the metal surface of the equipment by baking, the coating is abrasion resistant and highly adhesive to metal surfaces. Welding or connecting of seams, joints or other points of possible chemical deterioration are not required since the coating forms a continuous protective sheath over undercuts and crevices as well as flat surfaces.

Duct sections of a fume exhaust system (top) and steel grating, wire mesh screening, belts, rack and clamp and messenger wires (bottom), all of which have been coated with the Saran-like vinyl resin-base protective anti-corrosive coating supplied by Quester, Inc.

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Government Specification
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Aircraft Finishes
RANDOLPH
PRODUCTS CO.
CARLSTADT, NEW JERSEY

Polyethylene-Lined Shipping Drum

Polyethylene-lined drums will be used by Hanson-Van Winkle-Munning Co., Matawan, N. J., for shipping all chemicals packaged at the Matawan plant. Replacing wax-lined and unlined fiber containers, the new drums will permit customers to store chemical supplies longer without loss of net weight or damage to product or container.

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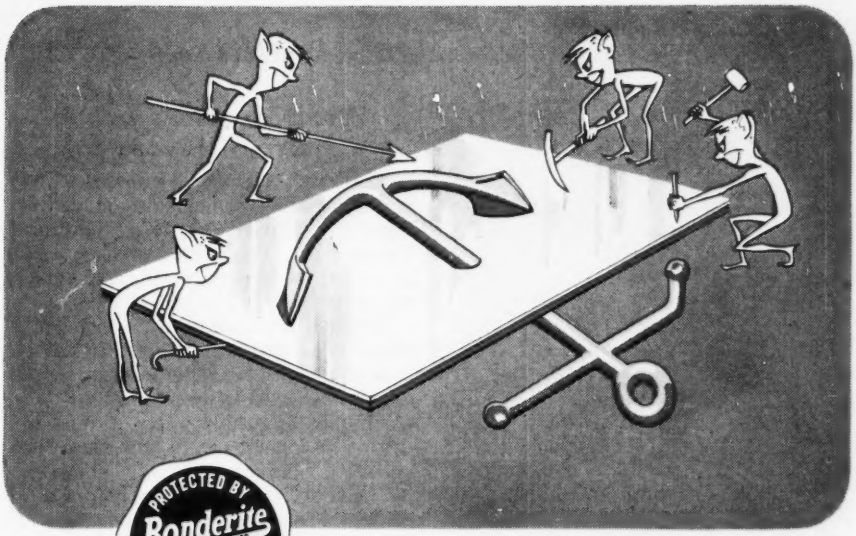
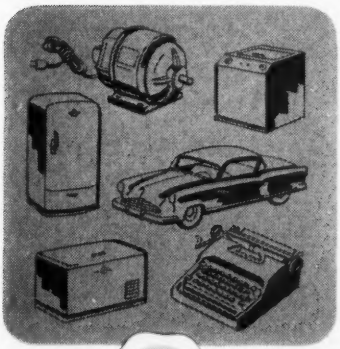


Anchors paint to metal!



Since 1915—leader in the field

● Even the best paint needs help to stick to metal surfaces. It needs Bonderite to supply a secure anchor.

Bonderite creates a nonmetallic phosphate coating integral with metal surfaces. This coating provides a lasting bond between paint and metal. Because it is nonmetallic, it resists corrosion, preventing moisture penetration and peeling, confining finish damage through scratch or bump to the site of the paint film break.

Bonderite, standard corrosion resistant paint base treatment throughout the world, makes it possible for paint to perform its functions of protection and fine appearance through years of hard service.

Your products should have Bonderite under the paint. Get the facts on Bonderite's efficiency, economy and dependability. Write today!

*Bonderite, Bonderlube, Parco, Parco Lubrite—Reg. U.S. Pat. Off.

Parker RUST PROOF COMPANY
2172 E. Milwaukee, Detroit 11, Michigan

BONDERITE	BONDERITE and BONDERLUBE	PARCO COMPOUND	PARCO LUBRITE
corrosion resistant paint base	aids in cold forming of metals	rust resistant	wear resistant for friction surfaces

tributor of metal finishing equipment, has developed an addition agent for brass plating solutions.

Designated as "Brass Additive" the product is said to assist in maintaining an even brass color in the deposit, and will prevent the formation of cyanide and ammonia fumes during the operation of the solution.

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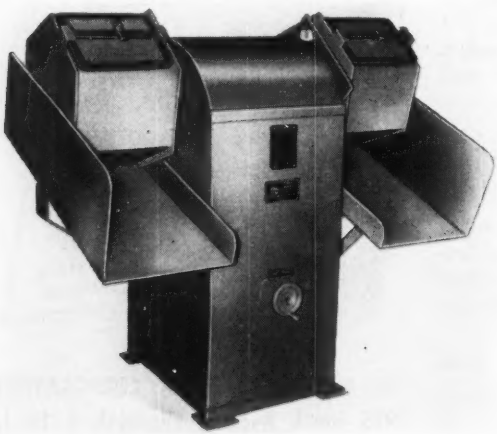

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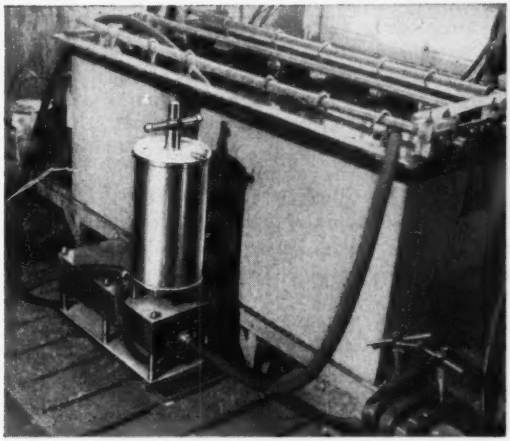

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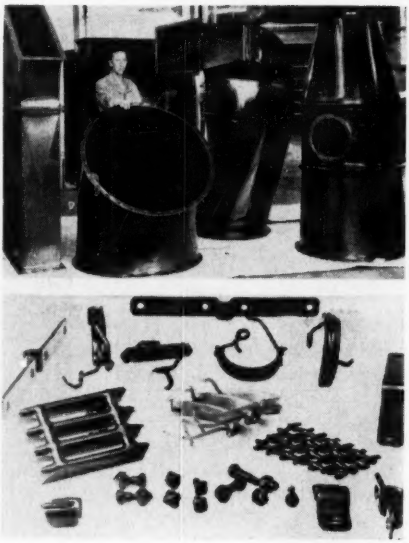

Duct sections of a fume exhaust system (top) and steel grating, wire mesh screening, bolts, nuts and clamp and messenger rings (bottom), all of which have been coated with the Bakelite vinyl resin-base plastisol anti-corrosion coating supplied by Quelcor, Inc.

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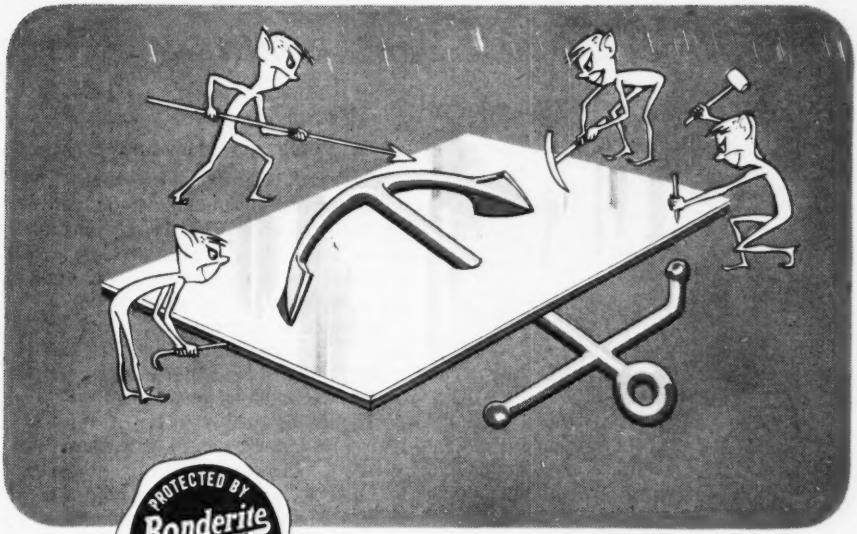

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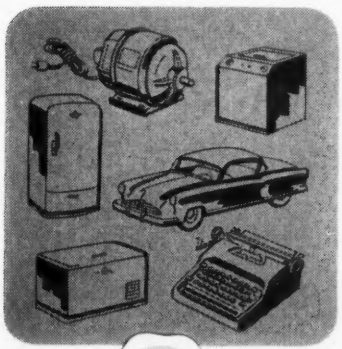

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Polyethylene-Lined Shipping Drum

ucts shipped, will prevent deliquescent products from losing moisture during shipment and storage. It will also prevent moisture from damaging hygroscopic products. H-VW-M, manufacturer of equipment and supplies for the metal finishing industry, is using the new drums principally for packaging powdered chemicals, nickel chloride, cobalt sulphate and brighteners and addition agents used in electroplating baths.

There will be no change in the drum sizes availables; these range from 10 to 400 pounds.

The new drum consists of a polyethylene bag fitted into a fiber container that has a steel bottom. The bag-liner is permanently sealed to the bottom of the container. The liner tube is made extra long to allow for envelope-fold, string tie, tape or heat-seal closure. The extra length also offers contamination-proof reclosure after the drum is open.

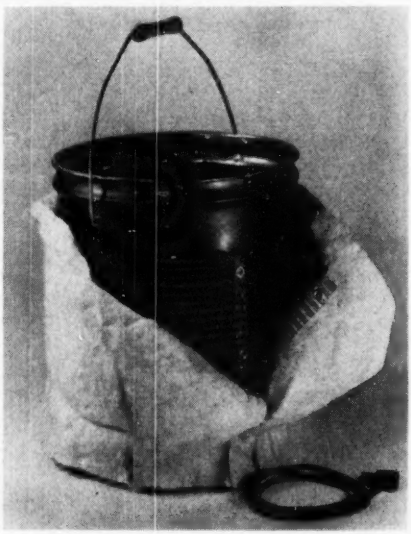
Wrap-around Electric Drum Heater

A line of electric heaters for five gallon drums has been announced by Pre-Fab Heater Company, Guilford, Connecticut. The heaters are especially suited to heating substances which might be damaged by overheating. Heat is applied uniformly at every point around the drum sides, and it can be of such a gentleness that melting points are not exceeded if necessary.

The heater simply wraps around the drum and is held secure with snap fasteners. A blanket of fibrous glass can be used to surround the heater and drum, thereby increasing heating speed.

Pre-Fab heaters are constructed of alloy resistance wire, covered with suitable insulation for electrical safety and an outer braid for wear resistance.

Shown in the photo is a 300-watt heater for melting chemical plastisols. In this case the wire is insulated with



Wrap-around Electric Drum Heater

Gleaming

Beauty — in products as in people — is sometimes a special "glow" that seems to come from within, to cast its radiance upon all who see. And such is the beauty of a truly fine product, built to exacting standards and finished with a coating created for that product alone. Manufacturers wisely seek that beauty for their own quality merchandise, by turning to specialists for help. Within our laboratory, a complete staff of experts is constantly at work developing individualized finishes for a wide variety of manufactured items. We invite you to submit samples of your own products for recommendation.

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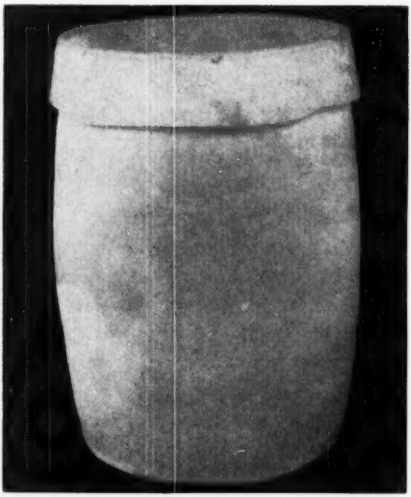
glass and silicone, with tough nylon outer braid. It plugs into a 115 volt circuit.

Other sizes and ratings can be built on order to fit a wide range of operating conditions.

Polyethylene Tank

Polyethylene tanks of 1/16 inch (.0625) thickness are now being manufactured by the Delaware Barrel & Drum Co., Inc., Wilmington, Delaware. The tanks are 55 gallon (22 x 32 inches), 30 gallon (18 x 27 inches), 15 gallon (15 x 22 inches) and 5 gallon size. The polyethylene tanks are full open head and are molded all in one piece without welds or joints. Due to the thickness of the sidewalls, the tanks are self supporting when filled with liquid. Suggested uses are pickling tanks, dip tanks, storage tanks, plating tanks. The photograph shows one type of polyethylene tank of 55 gallon capacity.



Polyethylene Tank

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Grain

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Abrasive Belts

Compounds

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MICHIGAN BUFF CO., INC.

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Ion-Exchange System

The versatile Stevens Model CA-1010A Ion Exchange System will produce distilled or de-ionized water from raw water; remove aluminum from a chromic acid anodizing bath and return chromium acid to the mother solution; remove cation impurities from a chromic acid plating solution reclaim tank and return the chromic acid to the bath; and will remove cyanides or chromates from rinse water, concentrate the waste either for destruction or reclamation and deliver de-ionized water for rinsing or make-up water.

Manufactured by Frederic B. Stevens, Inc., Detroit 16, Michigan, the CA-1010A unit uses two Dorrco d-i Cells, one a cation cell and one an anion cell,

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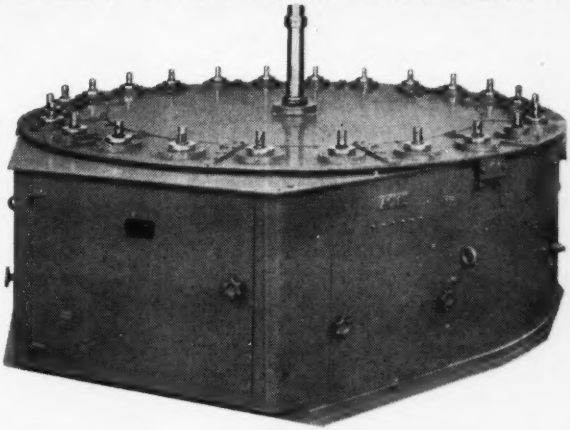
IN EITHER INDEXING OR CONTINUOUS TYPES
. . . TO MEET A WIDE RANGE OF PRODUCTION REQUIREMENTS

This ACME 10-ft. Combination Rotary, may be used for either indexing or continuous operation. It is equipped with 24 continuous revolving spindles for continuous rotary travel or for twelve station indexing operation utilizing every other spindle. When indexing, this table travels station to station with one second interval and up to 1200 indexes per hour.

CATALOG ON REQUEST



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For recommendations, send blue prints of part or samples before and after finishing operations, with detailed information on finishing operations and production requirements. If production methods will cut your costs, we can set your job up in our experimental department and you can inspect it in operation.

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SPECIAL MACHINERY — AUTOMATIC BUFFING MACHINES

ACME *Manufacturing Co.*

1400 E. 9 MILE RD., DETROIT 20 (Ferndale) MICH.

Builders OF AUTOMATIC POLISHING AND BUFFING MACHINES FOR NEARLY HALF A CENTURY

each of ten cu. ft. capacity and capable of a flow of 20 gallons per minute. The unit is constructed of Saran lined cells, and all chemical solution piping is lined with Saran or rubber.

The cells are mounted on a fabricated steel base and all instruments, meters and valves are mounted and pipe connections are made. The dilute chemical tanks are mounted on the base, one on each side of the ion cells.

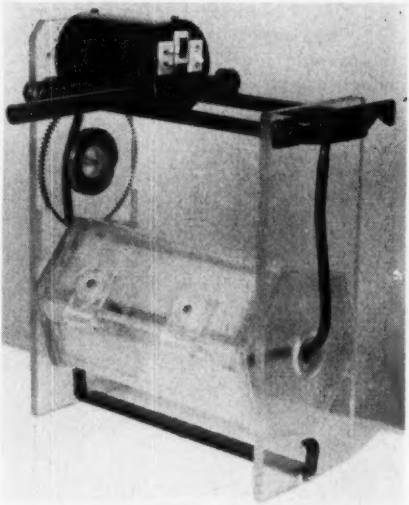
Accessories include the pump, motor, two flow-meters, a water meter, a conducting meter, a pressure gauge, two solution ejectors, a lightning mixer, two dilute chemical mixing tanks and necessary valves to operate the system.

Technical Bulletin No. P-112 available on request.

Portable Plating Barrel

A portable plating barrel designated as Lazo 2CP6 has been developed by Hardwood Line Mfg. Co., 2022 N. California Ave., Chicago 47, Illinois.

The unit, light in weight and easily handled, has been designed for barrel plating small quantities of small parts in various plating solutions. Constructed principally of clear acrylic plastic panels, the portable plating barrel is equipped with rubber covered, corrosion-free truss rods and a single idler gear for greater efficiency and fewer moving parts. The plating barrel can be adapted to existing plating tanks without the use of special brackets.



Lazo 2CP6 Portable Plating Barrel

As the accompanying illustration shows, a geared head motor, mounted on the cylinder superstructure, makes possible continuous rotation of the barrel, even between tanks, thus reducing dragout to a minimum.

Catalog available.

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SCOTCH BRAND
INDIVIDUAL PIECES • ANY SIZE OR SHAPE
For quick, accurate masking operations.
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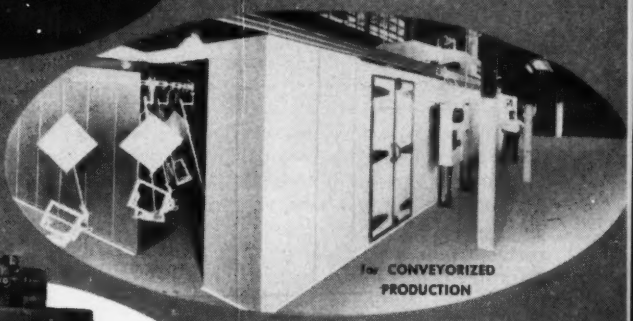
505 Carroll St., Brooklyn 15, N. Y.

Jet Blast Cleaning Machine

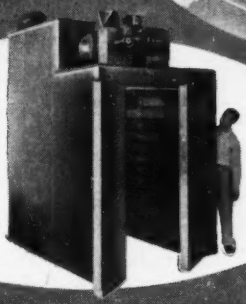
R. W. Renton and Company, 877 Addison Road, Cleveland 3, Ohio, maker of Jet Blast cleaning equipment, has announced a Bench Model unit which puts this method of metal cleaning well within the reach of the smallest shop.

The Bench Model, while smaller in size than the previous Renton units, operates with the same high efficiency in speedily and accurately removing

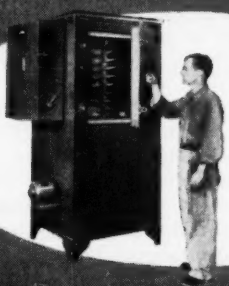
KIRK AND BLUM
INDUSTRIAL OVENS



for CONVEYORIZED PRODUCTION



for BATCH PRODUCTION



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If you have an oven application, discuss it with a KIRK & BLUM Engineer. There's no obligation. Write for free literature.

THE KIRK & BLUM MFG. CO.,
3116 Forrer St., Cincinnati 9, Ohio

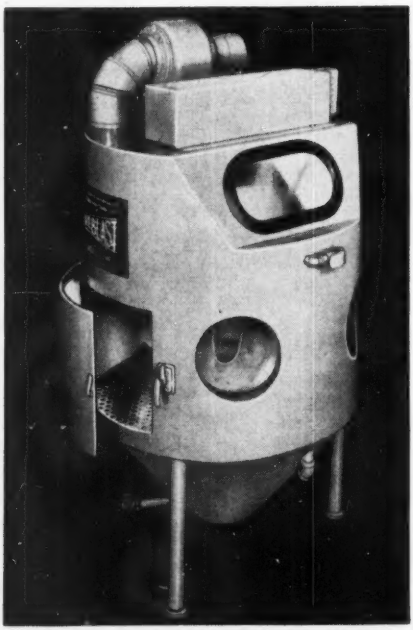
KIRK AND BLUM
INDUSTRIAL OVENS

rust, scale and all types of foreign deposits from dies, molds, tools and other precision articles without dimensional alterations.

Jet Blast is a method of cleaning metals which employs the use of fine abrasive particles suspended in a liquid. The liquid slurry is picked up by siphon injection and propelled to blast proportions by means of a high velocity air stream. There are no moving parts in contact with the abrasive. The blast of wet abrasive, when directed upon a surface, imparts a fine cleaning and polishing action. The thoroughly clean matte surface produced by Jet Blast increases the adherance and bonding qualities of paint, porcelain, rubber, electroplated metals and a host of other materials. It is also effective in cleaning or finishing threads for a close, smooth fit. Variations of abrasives gives the unit universal application.

The compact Bench Model Jet Blast is 24 inches in diameter, 43 inches high and weighs only 155 pounds. Because of its compactness and relatively light weight, it is portable and can be moved easily from one job location to another. One or two blast guns may be used with 28 to 42 cubic feet of air per minute at a pressure of 85 to 100 p.s.i. Liquid capacity is two gallons and the abrasive capacity is thirteen pounds. The motor for blower operation, the only moving part of the Bench Model Jet Blast, is 1/16 h.p., 110 volts, sixty cycle single phase.

Bulletin available.



Bench Model Jet Blast Cleaning Machine

Corn Cob Meal

Manufacturer: Polishing Products, Inc., Vincennes, Indiana.

The use of Corn Cob Meal, graded to specific mesh fineness, for various operations in the finishing industry, is becoming quite general. It may be used for burnishing or polishing, soft grit blasting, or tumble drying of cleaned or electroplated products.

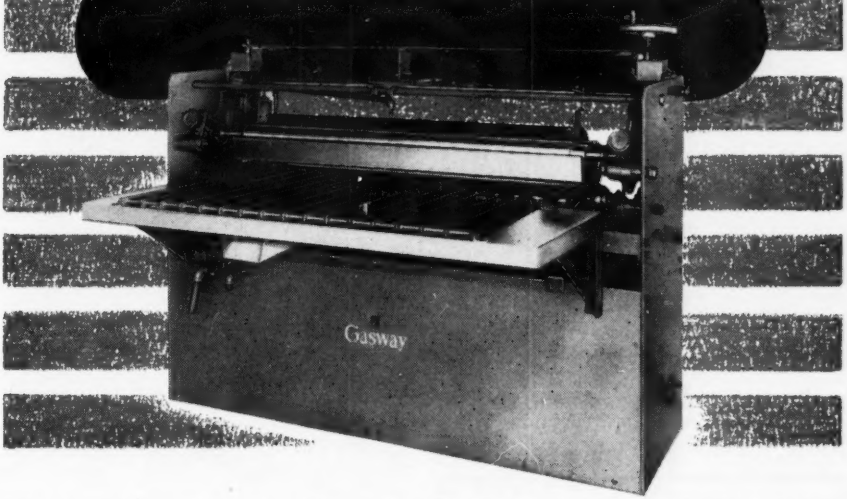
Burnishing. Because of its tough, resilient abrasive characteristics, Corn Cob Meal can be used effectively for burnishing metal products by the tumbling method. In like manner, brass, ball and roller bearings, aluminum ware, and other products may be polished, using this product.

Soft Grit Blasting. Airplane parts, electric motors and generators may be safely cleaned by this method without surface damage or change of dimensions.

Drying. Electroplated parts may be tumble-dried or bin-dried through the use of Corn Cob Meal. Drying units

Rollacoat for economy

GET FINER—FASTER FINISHING!



The benefits to be gained by using the Rollacoat method of applying finishes and protective coatings, to practically any type of flat materials, are three-fold. In the first place coating speeds are greatly increased over those of any other method and are governed largely by how fast the coated materials can be handled or dried. Secondly, the coverage per sq. ft. per gallon is usually at least 50% greater, the only loss being the paint removed from the rolls at the end of a run. In the third place you obtain finer quality of finish due to accurate control of thickness and eveness of coat.

The applications of Rollacoating are numerous. Top, bottom and sides of practically any type of flat material, whether sheet or coil stock, can be coated by a single pass through the machine.

Special equipment for cleaning, treating, coating, drying, and rewinding strip in continuous process can be constructed to special order.

GASWAY CORPORATION

Write or wire today for the 12 page Gasway illustrated book describing Rollacoat Finishers, their possibilities and limitation.

6463 N. Ravenswood Ave.
Chicago 26, Illinois

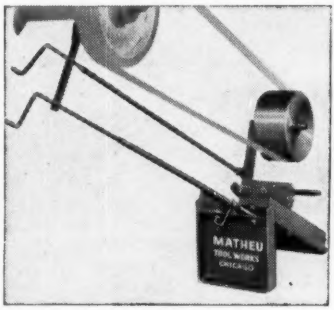
are usually heated, so that a portion of the absorbed moisture is evaporated during the process.

Backstand Idler

Faster abrasive belt finishing with less down time is provided by an improved backstand idler announced by Matheu Tool Works, 2426 Clybourn Ave., Chicago 14, Ill.

Called the Belt Master, the improved idler provides belt tension and tracking adjustment from the operator's position. The tracking adjustment moves the idler pulley from side to side instead of turning the face, thereby avoiding destruction of bond. It tracks belts ¼ to 6 inches wide.

One-motion tension release permits belt change in a few seconds. Idler pulley is balanced, 10 inches diameter, 5 inch face with closed ends; it rotates on grease sealed, heavy duty Seal Master ball bearings. Front and rear mounting slots 8 inches long make for easy installation and quick alignment.



Belt Master Backstand Idler

Literature available on request to manufacturer.

NEW

BRASS plating

—can be used with present brass plating solutions

ADDITIVE

- Faster Plating
- Brighter Finish
- No Cyanide Fumes
- Many plus Advantages

Information on request

JELCO PRODUCTS

153 East 26th Street, New York 10, N. Y.

LExington 2-3055

Room-Temperature Metal Cleaner

A metal surface cleaner that can be used at room temperatures has been developed in the research laboratory of Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Michigan.

The new cleaner, identified as Klem K-A-T Cleaner, is a combination of a special alkaline and an efficacious emulsion cleaner and can be used for removing soil from both ferrous and non-ferrous metals. The cleaner is used at plant temperature and does not need to be heated.

The formula is adapted to use in hard water areas without formation of normal hard water precipitates. Maximum corrosion resistance and minimum surface etching are claimed for the product, as well as the fact that the

When you can SEE the difference . . . IT'S TOO LATE!

Prime with STANTITE!

One switch box was primed with Stantite, the improved wash primer, before top coating; the other was not. Exposure discovered the difference and proved Stantite's strong resistance to corrosion and rust creep. And after years of research in Stanley laboratories there are other differences you can see right off . . . Stantite handles easier; it's easier to mix and easier to spray. Add these advantages to its excellent adhesion to all surfaces and its adaptability to most top coats. The result: a wash primer that insures your finish. For full details about spraying Stantite and clear Stantite for dipping write Stanley Chemical Co., 31 Berlin Street, East Berlin, Connecticut.

STANLEY

Industrial Coatings

STANLEY CHEMICAL

LACQUERS · SYNTHETICS · JAPANS · ENAMELS

protective film which it imparts to the work piece is compatible with paint solvents, making painting possible immediately after rinse.

Technical information available.

PRODUCT LITERATURE

In requesting copies of catalogs or bulletins mentioned in this issue — use the READER SERVICE CARDS between the covers.

ELECTRO-GLO ELECTRO-POLISHING. Electropolishing solutions supplied by **Electro-Glo Company,** 1432 S. Talman Ave., Chicago 8, Ill., to be used in electropolishing copper and copper alloys to form bright surfaces, are described in a bulletin available from the company.

The bulletin outlines the Electro-Glo method of electropolishing, listing the operations that may be performed with the solution, and summarizing the advantages of the process. Specifications for Electro-Glo "200" solution are listed, and solution preparation and control included in the bulletin.

COMPLETE SPRAY PAINTING AND FINISHING SYSTEMS. The availability of a paint spray equipment catalog **G-54** has been announced by the **M & E Manufacturing Company,** Indianapolis, Indiana. Designed primarily for operating personnel, purchasing agents and processing engineers, it fully describes all products of **M & E's** manufacture from the little hose connection and spray gun all the way through air compressors, exhaust fans, water wash paint spray booths and up to the largest complete finishing and air replacement system.

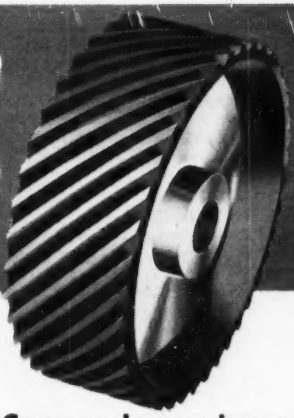
In 68 briefly writen pages, it presents facts concerning today's equipment problems. It combines down-to-earth practical material useful in the day-to-day job with the future look and the broader knowledge necessary to an alert engineer or employee.

"INSTRUMENTATION FOR WATER, SEWAGE AND INDUSTRIAL WASTE TREATMENT." BULLETIN 7302 describes the role of instruments in modern water, sewage and waste treatment processes. Liberally illustrated with drawings and photographs of existing installations, the bulletin is a guide for organizing engineering thoughts on instrumentation of treatment processes. Literature references are included so that any subject such as "flow" or "chlorination" can be pursued further for instrumentation details and data.

A copy of Bulletin 7302 may be obtained from **Minneapolis-Honeywell Regulator Co., Industrial Div., Sta. 64,** Wayne and Windrim Aves., Philadelphia 44, Pa.

CHEMSTEEL CONSTRUCTION COMPANY, INC.
301 Chemsteel Bldg., Walnut St., Pittsburgh 32, Pa.
Send data on Engineering & Construction facilities for
ACID-ALKALI-PROOF CONSTRUCTION
of processing & storage tanks & flooring in
☐ Steel Plant ☐ Chemical ☐ Textile ☐ Food
NAME.....
COMPANY.....
ADDRESS.....
CITY.....ZONE.....STATE.....

CUTS COSTS like Magic!



Chicago Rubber Company's amazing new R54 contact wheel cuts better—faster—longer and will substantially reduce your grinding and polishing costs 3 ways.

This precision machined and accurately balanced wheel is easily and quickly knocked down and reassembled for tire replacement or change.

- Replace only the rubber tire when necessary instead of the entire wheel.
- Choose from a complete assortment of tire treads for different grinding operations, still using the same wheel.
- And as usual Chicago Rubber Company's R54 contact wheel allows you to get the most wear from your abrasive belt—more than you ever got before.

There is a replaceable rubber tire with proper tread for every grinding requirement and in a wide variety of durometer ratings. Write for descriptive literature.

"IT'S THE WHEEL THAT DOES THE WORK"

CHICAGO RUBBER COMPANY, INC.

Main Office & Factory
2620 N. Clybourn Ave. Chicago
Makers of the COSMOWHEEL

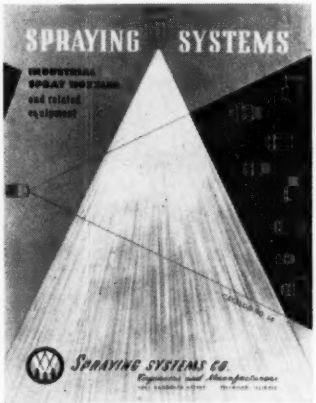
WATER DEMINERALIZERS. Barnstead Still & Sterilizer Co., of Boston, has announced the publication of a 20-page catalog which describes the firm's entire line of mixed-bed, two-bed, and four-bed demineralizers for laboratory, hospital, and industrial use.

The publication, which contains many photographs, drawings, and diagrams, explains in detail the principles, construction, and operation of both mixed-bed and multi-bed demineralizers, ranging in capacity from 5-gallon-per-hour laboratory units to industrial installations producing 2500 gallons per hour. It gives dimensional and performance data on all models and explains the difference between distilled and demineralized water, considerations affecting selection of proper equipment for a given job, and the actual installation and operation of Barnstead Demineralizers.

CATALOG No. 127 may be obtained without charge from **Barnstead Still & Sterilizer Co.**, 12 Lanesville Terrace, Forest Hills, Boston 31, Mass.

INDUSTRIAL SPRAY NOZZLE CATALOG. Spraying Systems Co. has announced an industrial spray nozzle catalog in which many standard and special industrial spray nozzles are illustrated and described. For each nozzle, complete data is listed covering capacity and spray angle. Dimensional specifications for all standard nozzles are also given.

Because the information in **CATALOG No. 24** is so extensive, a new type of index was designed to assist the reader in finding desired data. Spray nozzles are indexed in terms of "Spray Patterns."



The six main headings are "Hollow Cone, Full Cone, Square Spray, Flat Spray, Straight Stream and Air Atomizing." In addition to spray nozzles, information is supplied on a wide variety of related equipment such as line strainers, elbows, check valves, and adjustable joints. For handy use by the engineer, tables are included on spray coverage and pipe frictions.

A copy of **CATALOG No. 24** is available from **Spraying Systems Co.**, 3201 Randolph St., Bellwood, Illinois.

COLOR AND COLOR-DIFFERENCE. BULLETIN No. 131 produced by **Gardner Laboratory, Inc.**, 4723 Elm St., Bethesda 14, Md., describes the Gardner Color and Color-Difference Meter, including the latest model which incorporates the Electronic Galvanometer. Also described are a number of precision measurement heads that may be connected to the instrument.

LANLY
FINISHING OVENS
THE LANLY COMPANY • 710 PROSPECT AVE
CLEVELAND, OHIO
WRITE FOR INFORMATION AND LITERATURE

For a real good polishing job use
Keystone TURKISH Emery
FRESH SUPPLY AVAILABLE
KEYSTONE EMERY MILLS *Write for Sample* **4316 Paul St., Phila., Pa.**

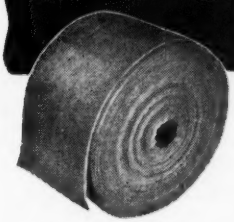
MERCO ELECTRIC RADIANT HEATER. A data sheet explaining the distribution factor of the Merco Heat Ray Tube, the use of tubing, and the relatively low operating temperature of the tube, all of which are features of the Merco Electric Radiant Heater, is available from **Corona Mfg. Corp.**, 5210 San Fernando Rd., Glendale 3, Calif. The advantages of using Merco High Efficiency Infrared in drying, baking, and other heat processing operations, are listed and the sheet is illustrated with six clear photographs of typical industrial installations of Merco Heat Ray Tubes.

METALWELD RUBBER LININGS BULLETIN. An illustrated, two-color, eight-page bulletin describing the advantages and application of rubber lining to steel tanks, drums, pipes, valves, fittings and pumps has been published by the **Protective Coatings Division, Metalweld, Inc.**, Scotts Lane & Abbotsford Ave., Philadelphia 29, Pa. Included in the bulletin are tables giving the resistance characteristics of MW rubber lining to inorganic acids, salts and alkalies, organic materials and a wide group of miscellaneous materials. Details on the chemical, abrasive and temperature resistant qualities of rubber linings and the different types of linings available are also given. Metalweld's plant facilities for cementing, lining, and vulcanizing all types and sizes of equipment are illustrated, and the B. F. Goodrich Vulcalock Bonding Process, which joins rubber and steel together with a bond strength of over 500 psi, is described.

RNH_2. STARTING POINT FOR NEW FAR REACHING SYNTHESES, a folder produced by **Hercules Powder Company**, Delaware Trust Bldg., Wilmington 99, Delaware, describes some of the known reactions and properties obtainable with Rosin Amine D, a primary amine made from specially treated rosin. Included are a list of some of the things that Rosin Amine D or its derivatives can do and a chart of Hercules Rosin Amine D products available.

For Dust Free Finishes!

BOND TACK CLOTH



IN ROLLS

Cut off any size piece to use as needed.

IN BULK

Cut and folded. Ready to use.

STAYS SOFT AND TACKY — A SPECK-FREE FINISH EVERY TIME

Now Available in Rolls or Cut Bulk—White or Gold

In Three Different Types of Cloth

Get your Tack Cloth packed just the way it's easiest for you to use . . . either in 150 yard rolls of 36" wide cloth or in handy cartons . . . 100 or more Tack Cloths to the carton.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up!

The Cut Bulk size is 18" x 36" . . . folded to 4½" x 18" for ease of handling. ALL BOND TACK CLOTH is *Spontaneous Combustion Proof, Lint-Free* and *Wax-Free*. Gives a sparkling speck-free Finish *every time*. Clean and sanitary. No waste.

TRY THEM and COMPARE RESULTS. Samples Gladly Sent Upon Request.

BOND CHEMICAL PRODUCTS CO.

"The Tacky Wiper Specialists"

2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

ALSO INDIVIDUALLY PACKED IN GLASSINE ENVELOPES —144 to the Carton

A WARRANTY OF SATISFACTION IN EVERY CARTON

ANODIZED ALUMINUM TESTER BULLETIN (GEC-494) produced by **General Electric Co.**, Schenectady, N. Y., lists the features, application, description, operation, and specifications of the Anodized Aluminum Tester. Stated to quickly and accurately determine the effectiveness with which an anodized coating has been applied to an aluminum surface, the tester is pictured, showing main electrode and pin-point ground clip. The pin-point construction of the clip prevents scratching of the surface.

VAPOR SPRAY DEGREASER BULLETIN. A bulletin describing the Metalwash improved-design Vapor Spray Degreaser is available from **Metalwash Machinery Co.**, 85 North Ave., Elizabeth 4, N. J. Included among the advantages of the unit described in the bulletin are its unobstructed tank walls, over-sized water separator and pump compartment, simplified design as to service connections, and demand type water control.

The degreaser is designed for operation with perchlorethylene or trichlorethylene and may employ gas, electricity, or steam as the heating medium.

COMPRESSOR CATALOG No. 810. A comprehensive catalog on air compressors is being offered by the **Binks Manufacturing Company**, 3122 Carroll Avenue, Chicago 12, Illinois. The book introduces Binks' complete line of new air compressors. In all, Binks points out, the line now includes 27 sizes in 5 types — all described in the new catalog.

The new models include single or two-stage units, tank-mounted, in sizes from ½ h.p. to 15 h.p. . . . single and two-stage units, base-mounted, from ½ h.p. to 30 h.p. . . . and portable single-stage units in capacities of from 2.2 CFM to 105 CFM.

Compressor buyers will find the data in this 16 page book helpful in selecting the unit most suitable for their requirements.

KEM ART METAL (WRINKLE) FINISHES, BROCHURE AM-514, produced by **The Sherwin-Williams Co.**, General Industrial Division, Cleveland 1, Ohio, discusses the features, film characteristics, and application characteristics of Kem Art Metal Finishes, a synthetic baking enamel for wrinkle-finish effects. General baking directions are given, as well as a chart of recommended baking schedules.

FELT PRODUCTS FOR INDUSTRY. A general catalog describing the Paramount Brand felt products manufactured by the **Bacon Felt Company**, Taunton, Mass., is available from the company.

Included in the catalog are illustrations and descriptive matter on wool felt wheels, bobs and sheets and hair felt sheets and wheels. In addition, there are several valuable tables on felt wheel selection and specifications, "how-to-do-it" hints, and physical and chemical properties for each size and grade felt.

Like earlier editions of the Paramount catalog, the new one should prove to be a valuable source book for materials finishers and manufacturers using felt in their products or processes.

PAINT MIXER

MIRACLE
5 GALLON
PAINT REJUVENATOR
All paint restored to original consistency without opening the can.
2 minutes per gallon.
MIRACLE PAINT REJUVENATOR CO.
127 E. 9th St., St. Paul 1, Minn.

FIELD SERVICE-SPECIAL REPORT. A mimeographed two-page report on CrysCoat HC, a phosphatizing material which creates a zinc phosphate coating on iron and steel, is available from **Oakite Products, Inc.,** 19 Rector St., New York 6, N. Y. The report describes and lists the characteristics of CrysCoat HC and gives instructions for use of CrysCoat HC in tanks and washing machines.

According to the report, the salt spray resistance of painted parts treated with Oakite CrysCoat HC exceeds the requirements of several Government Specifications.

ION-EXCHANGE BULLETIN. Available from **Frederic B. Stevens, Inc.,** Detroit 16, Mich., is an illustrated bulletin describing the Stevens Ion-Exchange System for treatment of plating and processing waste using Dorrco d-i Cells. Included in the catalog is a photograph of a typical, complete Stevens Ion-Exchange setup. The literature describes how this equipment may be used to remove impurities from rinse water so that the water may be used again. Treatment of anodizing solutions and anodizing rinse water is described. The bulletin includes a listing of the advantages obtainable through use of the Stevens Ion-Exchange System and a summary of the technical services available from Frederic B. Stevens, Inc.

WHICH POWER SOURCE FOR PLATING? Available from **The Electric Products Co.,** 1725 Clarkstone Rd., Cleveland 12, Ohio, is **REPRINT 20-703** entitled **"WHICH POWER SOURCE FOR PLATING?,"** an article by E. G. Schroeder, sales manager, Electric Products Co. The article discusses various factors which influence the selection of motor generator sets or rectifiers to serve as power sources for electroplating, anodizing, electrotyping, or electroforming processes. Some of the factors discussed include voltage regulation, operating efficiency, power factor, floor space, requirements and flexibility. Recommendations as to which type of equipment should be used for various plating applications are included in the article reprint.

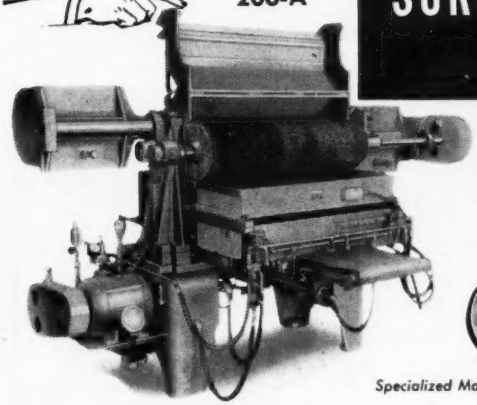
Here's the answer to your

SURFACE FINISHING PROBLEMS!

★ FROM ROUGH GLAZE TO MIRROR FINISH

CLAIR Model 206-A

SURFACE FINISHING MACHINE



Developed for surface finishing small hand tools, machine is equipped for mechanical holding or magnetic chuck, operated by an electro-hydraulic system. Spindle of single roll will accommodate buffs from 3" to 12" in dia. Work area with mechanical holding fixtures is 38" x 24"; with magnetic chuck, 38" x 14".

Write for Bulletin 206.

CLAIR

MANUFACTURING CO. INC.

Specialized Machine Equipment for Glazing and Polishing Operations

OLEAN, N. Y.

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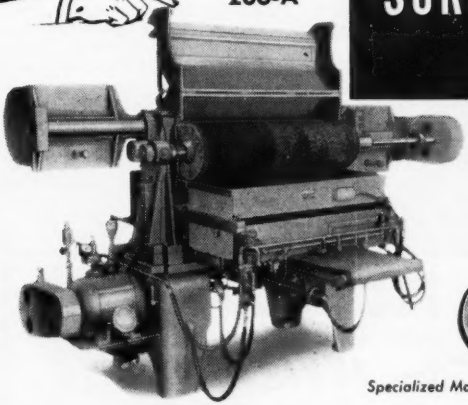

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CLAIR

MANUFACTURING CO. INC.

Specialized Machine Equipment for Glazing and Polishing Operations

OLEAN, N. Y.

The U. S. Stoneware Company, Akron, Ohio, has released a 16-page **BULLETIN NO. 730, on TYGON PAINT.** This bulletin also incorporates information on Tygorust, "no-prep" vinyl primer. The bulletin tells where and where not—how, and how not to use Tygon Paint and Tygorust Primer. Chemical-resistance charts, and a chart on recommended primers and surface treatments are included.

SELAS DEHYDRATORS, a 12-page bulletin, which describes the continuous removal of water vapor from air to dew points as low as 100 deg. F., is available from the **Selas Corporation,** Philadelphia 34, Pa.

Three series of dehydrators are fully specified as to capacities and physical dimensions. A nomograph is provided for preliminary determinations.

WET AND DRY TUMBLING. BULLETIN PC-52, offered by **Tumb-L-Matic, Inc.,** 4510 Bullard Ave., New York 70, N. Y., describes five Tumb-L-Matic processes for tumbling metal and plastic parts by tumbling the parts with abrasive materials in rotating barrels.

Wet and dry processes for metal parts, wet and dry processes for plastic parts, and a combination process for special problems and materials are described. The bulletin tells when and where to use the different processes and the results you will get with each one.

Portable Sandblast Gun

—Complete— simply connect to air line

Rugged • Efficient • Guaranteed $19.50

A Real Performer handy in any shop

LINDBERG PRODUCTS CO., Box 885 P Los Gatos, Calif.

Included in the bulletin is a table listing the various types of barrels, and abrasive compounds and carrier media used for the cutting, smoothing and lustering steps of these processes. Also noted are research services offered by the Research Development and Technical Service Division of the company.

FATTY ACIDS . . . PREPARED FOR ACTION FROM NATURE'S CHAINS. This 20-page booklet covers the technology and usage of fatty acids from an all-industry point of view. It describes fat-splitting processes, separation of individual acids such as stearic and oleic, and methods used in purification and chemical modification of the natural acids. A composite flow sheet shows how various animal fats and vegetable oils are processed to yield dozens of different specification products.

A review of major uses for fatty acids of different composition is supplemented with a usage chart showing more than sixty specific applications for these materials.

The booklet is offered by the **Fatty Acid Division, Association of American Soap & Glycerine Producers, Inc.,** 295 Madison Avenue, New York 17, New York, as a joint project of twenty-two producer members.

DATA SHEET ON ELECTROLYTIC STRIPPER FOR ZINC BASE DIE CASTINGS. Enthone, Inc., Dept. PF, 442 Elm St., New Haven, Conn., is distributing a data sheet describing the use of its electrolytic stripping compound, L-88, for removal of chromium, copper, and nickel plated coatings from zinc base die castings. Conditions under which the material must be used are described as well as equipment necessary for the process. Operating variables and full instructions for the use of the product to the greatest advantage are included in the bulletin.

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ROBERTS ROUGE COMPANY
STRATFORD, CONN.
Originators of Micro-Lustre Finishers

★ Fine buffing compounds are a combination of the best of materials and years of manufacturing experience.

Since 1881 A LONG TIME TO CONTINUE SUCCESSFULLY

CRATEX CATALOG No. 53. An eight-page catalog, containing a treatise on rubberized abrasives for burring, smoothing, and polishing operations and their use in industrial establishments, is available from **Cratex Manufacturing Co.**, 81 Natoma St., San Francisco 5, Calif. Wheels, points, blocks, sticks and cones of Cratex Rubberized Abrasives for machine or manual application are presented, together with complete specifications, in the catalog.

RECTIFIER BULLETIN. A new heavy-duty, selenium rectifier specially designed for use in plating and other metal finishing operations is pictured and described in a new bulletin offered by Hanson-Van Winkle-Munning Co. Besides combining a number of desirable features in one design, this rectifier is uniquely equipped with terminal tie-bars that permit output voltage to be changed without any change in a user's bus arrangements.

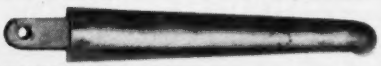
The 4-page, two-color bulletin tells what type of current and ripple is delivered by the rectifier. It gives information on models available, costs, operating capacity, unit sizes, type of input and kind of current switching.

Instruments and parts of the unit are pointed out on large exterior and interior photographs. Individual close-ups are given of the resetting starter, calibrated thermostat, up-draft fan, custom-built selenium stacks and heavy-duty transformers.

For copies of **BULLETIN ER-105**, write to John Karinja, **Hanson-Van Winkle-Munning Co.**, Matawan, N. J.

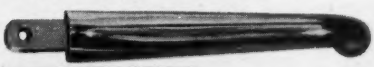
PORTABLE pH METERS. A four-page folder on Beckman portable pH meters—designed to simplify the choice of pH equipment—has been released by **Beckman Instruments, Inc.**, South Pasadena 1, Calif.

Salient performance features and pictures distinguish the four pH meters in the series. They include a highly accurate instrument for laboratory and research studies; a line-operated model for routine measurements in the control laboratory, and two lightweight portables for plant and field applications. The booklet, **BULLETIN 322-81**, also lists typical industries where these instruments are used.

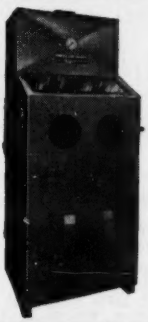


HANDLE "AS CAST"

HANDLE AFTER PRESSURE-BLASTING



HANDLE AFTER BUFFING



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BULLETIN A120. Free-Vane Air-Operated controllers are described in a new 32-page bulletin published by **The Bristol Company**, Waterbury 20, Connecticut. Instruments for automatic control of pressure, temperature, liquid level, flow, humidity, pH, and electrical variables are described. Among the new products described are time-program controllers and electronic Dynamaster Potentiometers and bridge instruments in air-operated control models. The fully-illustrated bulletin gives complete data on on-off, proportional, reset, derivative, reset plus derivative, and autoset types of controllers.

Bristol has also published a series of short bulletins giving complete specifications and other data on diaphragm control valves for air-operated controllers.

PERMUTIT ION EXCHANGERS. To summarize the properties of most of their ion exchangers and indicate some of their uses, a 12-page **BULLETIN No. 2508** has been prepared by **The Permutit Company**, 330 West 42nd St., New York 36, N. Y.

The bulletin details a general history of ion exchange engineering, gives data on the proper selection of ion exchangers and lists general applications in the treatment of water and special problems associated with the recovery of valuable metals from solutions, streptomycin purification, sugar refining, separation of rare earths, treatment of wastes, etc.

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McKeon's Zinc-Brite

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Sulphur Products Co., Inc.

228 McKEON WAY GREENSBURG 6, PA.

BRONZE PLATING DATA SHEET. TECHNICAL DATA SHEET No. 127 describing the electroplating of bronze is available from **Metal & Thermit Corp., Chemical Div.**, 100 E. 42nd St., New York 17, N. Y.

Included in the data sheet are descriptions of the bronze plate and recommendations for its use, as well as a complete description of the plating process, including solution formulas, power requirements, and solution analysis and control.

FAST-DRI SYNTHETIC ENAMEL. BROCHURE S-502 is a four-page leaflet describing Sherwin-Williams Fast-Dri Synthetic Enamels. Produced by **The Sherwin-Williams Co.**, General Industrial Div., Cleveland 1, Ohio, the leaflet lists applications, features, and film characteristics of the Fast-Dri Enamels. Results of print tests are pictured to illustrate drying speed. Suggested application system is included.

ELECTRO-FORMING AND DEPOSITION BRING NEW LATITUDE TO THE DESIGNER. A two-page illustrated reprint available from **International Nickel Co.**, 67 Wall St., New York 5, N. Y., describes two developments in the plating field that widen the scope of the designer.

The article discusses the deposition of heavy, uniform nickel coatings on plastics to give them a metal surface while preserving their light weight. Nickel, it is explained, may be the finish coat or may be used as a base for chromium or precious metals. Electroforming of simple and complicated shapes, on permanent or destructable mandrels, within tolerances of 2/10,000 of an inch is discussed. It is stated that there is little limitation to the complexity of the shapes that may be produced. Rounds, squares, recesses, undercuts and other variations can be combined in a single design. Forty thousand finished pieces a week have been fabricated by electroforming.

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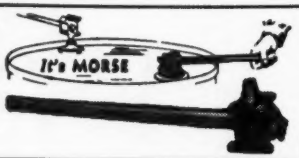

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SURVEY CHART ON ENAMEL. A CHECK CHART on complete analysis of the use of enamel, where to use it, in production and in maintenance, through which savings in actual application and preparation costs can be minimized, is available from **The Wilbur & Williams Co.**, 130 Lincoln St., Boston 35 (Brighton) Mass. Analysis by industries where most wanted qualities in enamels are desired.

"MYLAR" POLYESTER FILM. A technical bulletin containing up-to-date information on the physical, electrical, and chemical properties of "Mylar" polyester film, and suggested applications, has been issued by the Du Pont Film Department.

First of a series to be issued on "Mylar," the new bulletin (No. 1-2-53) runs 14 pages, complete with charts, diagrams, and tables. "Mylar," one of the newest products of Du Pont research, is now being produced only in limited quantities for market development purposes.

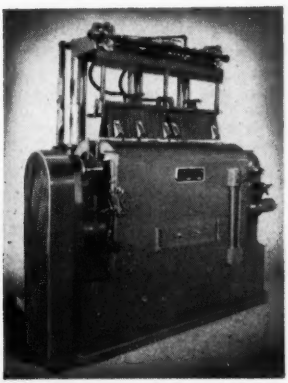
In addition to a detailed table on the physical properties of "Mylar," the bulletin compares these properties with those of other Du Pont films—cellophane, polyethylene, and acetate. One section gives complete information on the film's electrical properties: dielectric strength, insulation resistance, volume and surface resistivity, etc. The chemical properties section shows the tensile strength and tear resistance of "Mylar" upon exposure to many chemical reagents.

Copies of the new technical bulletin on "Mylar" (No. 1-2-53) may be obtained from the **Du Pont Film Department's Sales Development and Technical Service Section**, Wilmington 98, Delaware.

VIRGO SALT DESCALING OF TITANIUM ALLOYS. BULLETIN 25-T, available from **Hooker Electrochemical Co.**, Niagara Falls, N. Y., describes the molten salt bath descaling of titanium and its alloys.

This bulletin relates Hooker's past experience with titanium descaling so that present and prospective users of Virgo Descaling Salt can best apply the Hooker process to their problems. The bulletin includes full instructions regarding recommended descaling procedures and cites a number of recently published articles and bulletins describing the process.

Reduce Finishing Costs with



Central Vertical Polishing Machine with 18" stroke. Also available with 36" stroke and Horizontal Machines with 7 to 21 foot stroke.

CENTRAL VERTICAL and HORIZONTAL POLISHING MACHINES

For high speed operation, lower costs and high quality finishes on a variety of shapes, contours, flats and sheets investigate CENTRAL Hydraulically operated Vertical and Horizontal Polishing Machines. They are fast, economical and simple to operate. Anyone can operate them.

Our Patented Hydraulic Contour Device permits the finishing of many different shapes. Stroke is adjustable by stepless increments from 2 inches to full stroke. Work may be oscillated across face of rolls, at the turn of a valve, for high finish and even roll wear.

Vertical machine (illustrated) is used by manufacturers of hardware, die cast and formed handles, auto trim, fishing lures, cutlery and novelties.

Central Vertical Polishing Machines may be set in batteries with conveyor feed system when a sequence of polishing operations is required. Conveyor and magnetic chucks can be furnished.

Full information on request.

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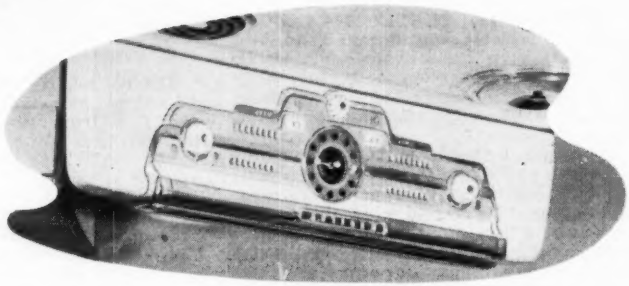


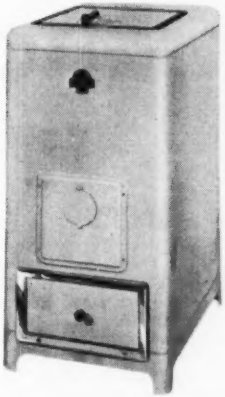
The back splasher panel of the Crosley Model REPDO electric range is an assembly on which many finishes are used. The basic panel is steel, finished with one ground coat of porcelain enamel and one cover coat of white titanium acid resisting porcelain enamel. The lamp shield, made of type C-57S aluminum, is bright anodized. The lamp shield end caps are zinc die castings finished in bright chromium plate. The escutcheon, made of type C-57S aluminum, is bright anodized. Certain areas have a satin finish, and are covered with aluminum synthetic baking enamel, followed by a clear cover coat of synthetic baking enamel.

(Photo courtesy Avco Mfg. Corp., Appliance and Electronics Division, Cincinnati 25, Ohio.)

The housings for the Ampro Premier '40,' 16mm sound projector are made from aluminum die castings and sand castings. The aluminum castings are cleaned and finished with "Ampro Bronze" wrinkle baking finish.

(Photo courtesy Ampro Corporation, Chicago, Illinois.)

that aid in appearance and utility



The gas fired Deluxe Model "Calcinator" home incinerator and disposal unit, manufactured by Valley Welding & Boiler Co., Bay City, Michigan, is finished in Sicon White silicone heat resistant finish which can withstand temperatures of 400 to 500 deg. F. without losing color or gloss.

(Photo courtesy Midland Industrial Finishes Co., Waukegan, Illinois.)

The flat rim lavatory, a product of Briggs Mfg. Co., is made of vitreous china and features brass fittings finished in bright nickel and chromium plate, as well as a special, one-piece, polished stainless steel moulding used for installation of the product.

(Photo courtesy Briggs Mfg. Co., Plumbing Ware Div., Detroit 11, Michigan.)

NEWS of the Industry

NEW PLANTS

On March 1 the Chicago Branch Office of **THE HARSHAW CHEMICAL COMPANY** moved into its new building located at 4925 S. California Avenue.

The modern single story structure with a gross area of 26,000 square feet has been under construction since last October. It houses the Sales Office, Warehouse Stocks and a completely equipped laboratory to service the company's new Perglow and Nubrite nickel plating processes recently introduced to the trade.

Located on the Indiana Harbor Belt Railroad with track, roadway and mechanical handling equipment capable of serving six cars and three trucks at one time, the new facilities provide the space necessary to handle the company's increasing business in the nine North Central States comprising the Chicago District territory.

F. L. HINTZE, formerly Harshaw's manager in the Cincinnati District and until recently assistant sales manager at the company's main office in Cleveland, is in charge.

CONFORMING MATRIX CORPORATION, Toledo, Ohio, has announced the opening of a West Coast branch at 38 La Porte St., Arcadia, California.

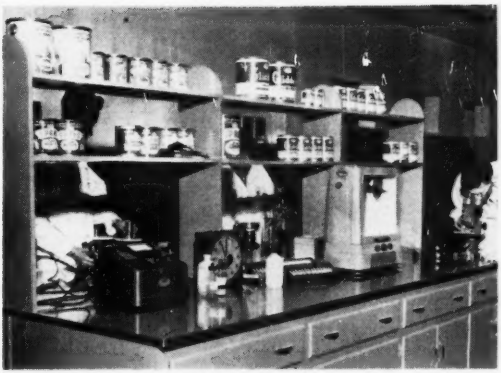
Jack M. Nims, a native Californian, has been appointed West Coast manager. Mr. Nims has a wide background of experience in paint chemistry. He will be in charge of sales and field engineering on the Conforming Matrix electroformed metal spray painting masks and air operated fixtures, tools, and automatic machines employed in production color decoration.

Completion of one of the most modern and efficient paint and varnish plants in the U. S. has been announced by **THE GLIDDEN COMPANY.**

The Atlanta plant, 10th Glidden plant in the nation, was purchased by Glidden early in 1953. It has been modernized and its capacity more than doubled. An ultra-modern research and testing laboratory has been added to its facilities.

Doubling of the Atlanta plant's production capacity is the first step in a

Chicago Branch Office of Harshaw Chemical Company



Most modern techniques of research and quality control are employed in the new laboratory at the Glidden Company's Atlanta paint plant.

long-range program of growth according to A. D. Duncan, vice president of the Glidden Company, and general manager of the Paint and Varnish Division. He stated that the plant is located on a 10½-acre site well suited for expansion.

"The tremendous market developing in the South can be served adequately only by southern plants," Mr. Duncan said. "We are proud to welcome this modern, strategically located plant into Glidden's nationwide organization."

New facilities include a large, attractive office building and three new stock warehouses, as well as the new research lab and production equipment. The new offices, designed for maximum efficiency, are completely air-conditioned and incorporate the most modern concepts of office lighting. Adjoining the offices is a fully equipped cafeteria, which supplies warm and wholesome food for employees.

Production operations incorporate the latest principles of materials handling, with raw materials received at the highest of four levels. Gravity is employed to move materials to manufacturing operations at intermediate levels, with the finished products arriving at the lowest level ready for shipment.

Assisting James L. Beauchamp, Atlanta regional director, are three veteran Glidden executives: Walter S. Herner, plant superintendent; Harold W. Hayward, director of laboratory research and production control, and James F. Lanier, sales manager.

The Atlanta paint plant is Glidden's second in the South. The first, at New Orleans, has been formulating finishes especially adapted for use in southern climatic conditions for more than half a century.

The Atlanta plant at present is servicing 11 branches and warehouses in the southeast. They are located at Birmingham, Ala.; Chattanooga, Tenn.; Knoxville, Tenn.; Mobile, Ala.; Nashville, Tenn.; Miami, Fla.; Jacksonville, Fla.; Orlando, Fla.; Tampa, Fla.; Charlotte, N. C., and Atlanta.

The first phase of a $500,000 program of expansion and improvement of its acoustical tile manufacturing facilities at

The Glidden Company's new Atlanta plant, located on a 10½-acre site ideally suited for expansion, was designed to provide manufacturing, distribution and specialized paint research facilities for the rapidly expanding southeastern market.

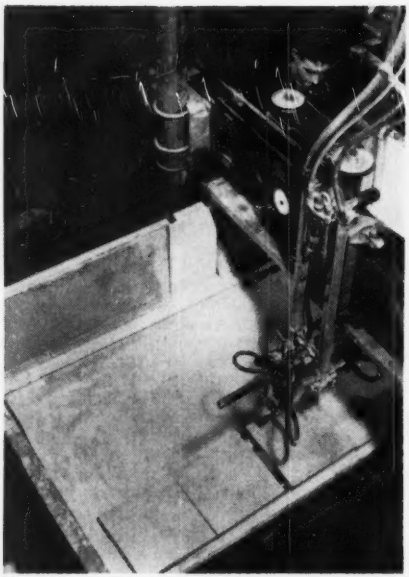
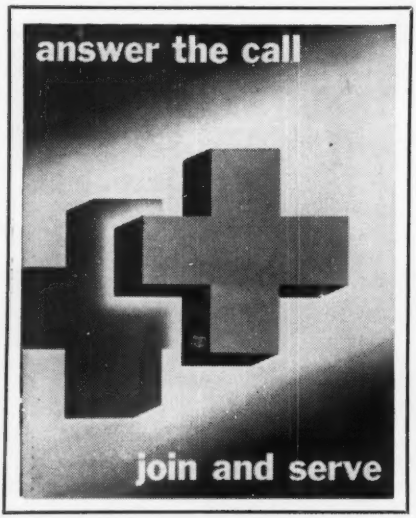


Fig. 1—The second DeVilbiss horizontal automatic spray booth on the acoustical tile line where apparatus operating on a traversing mechanism applies the second and final finish coat to the tile, which is then moved into the final drying oven.



Newark, Ohio, has been completed, **OWEN - CORNING FIBERGLAS CORPORATION** has announced.

An automatic production line is now in operation to manufacture perforated, textured and Stria tile, and blanks for the Sonofaced products. A second and similar line will be completed this year.

The new line, 240 feet in length and shaped like an elongated horseshoe, has been built to operate 24 hours a day, seven days a week.

In a continuous process, three coats of paint can be applied and dried separately in a total of four minutes.

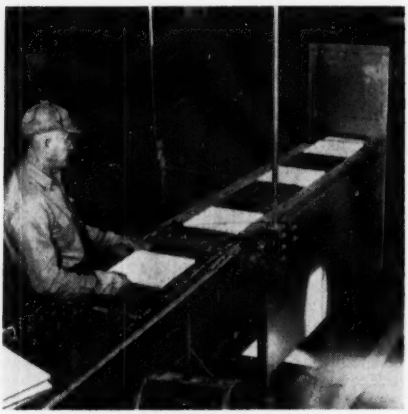


Fig. 2—Fiberglas acoustical tile emerges from the final paint drying operation and again is inspected and imperfect squares removed. Tile to be perforated is moved to another position on the fully automatic production line.

A fabrication machine, custom-built for the line, performs any combination of bevel cutting, kerfing, spline grooving and cutting to the desired width.

Two important components of the automatic tile production line are made of tough, lightweight Fiberglas-reinforced plastics—a 250-gallon tank in which paint is mixed and stretches of pipe which circulate it.

WYANDOTTE CHEMICALS CORPORATION, producer of specialized cleaning products for business and industry, recently began construction of a new plant at Los Nietos, California, according to an announcement made by Robert

Architect's conception of Wyandotte Chemicals Corporation plant at Los Nietos, California.

B. Semple, president. The plant site is in Los Angeles County, 16 miles southeast of the city of Los Angeles. Production in the new plant is scheduled for August. At that time manufacturing will be discontinued at the present Wyandotte plant on College Street, Los Angeles, which has been in operation since 1950. The new plant will provide increased product outlet and improved delivery for the entire Pacific Coast area to the metal industry.

The new Wyandotte Chemicals plant will occupy a five-acre plot adjacent to major highways. The new buildings will be of the modern functional type and will contain research and technical service laboratories, manufacturing and shipping facilities, as well as the Los Angeles district sales office of the Wyandotte, Michigan, firm.

The Los Nietos plant will supply materials to more than 170 jobbing firms in California, Nevada and Arizona, as well as to export agents in Hawaii, Mexico and the Phillipines. Representatives of these jobbing firms completely cover bulk users of cleaning, sanitizing and specialized alkalies, as well as floor absorbents in the area served by Wyandotte Chemicals' new Pacific Coast plant.

THE INDUSTRIAL FILTER & PUMP MANUFACTURING COMPANY, 5904 West Ogden Avenue, Chicago 50, Ill., is completing its third expansion program in the last six years. Included in the present program is a plant addition of 15,000 square feet and new equipment. This increased factory area will provide increased production and better delivery of pressure filters and ion exchange equipment, rubber lining service for the chemical process industries, heat exchangers and centrifugal pumps for processing industries and oil refineries, and salt fog and humidity test cabinets that are used for accelerated testing of the quality and durability of plating and other finishes on metal products.

Supplementing these enlarged manufacturing facilities is a new research and development department that will work on improvements in the design and performance of the company's products, and on new applications, also on the development of new products and services that will be announced and offered as soon as perfected. Pilot models of the company's products are set up to analyze customer problems in new applications of its equipment and unusual operating conditions. Also, a new experimental laboratory has been outfitted and staffed to study coagulation rates, treatment of industrial wastes, conditioning of industrial process water, and ion exchange applications.

The office space was enlarged providing over 1000 additional square feet for the waste treatment engineering department and the expansion of the other engineering departments. The engineering personnel has been doubled by the addition of specialists in the processes, methods, and

Addition to plant of Industrial Filter & Pump Mfg. Company.

equipment in industrial process-water conditioning, ion exchange treatment of industrial wastes, heat exchange, and metal finishing.

During the past year the company expanded its field service organization opening new branch offices with engineering specialists in several industrial centers.

COMPANIES

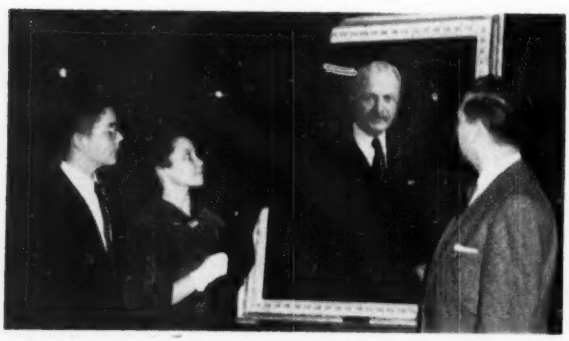
Agreement has been reached for **THE CARBORUNDUM COMPANY** to acquire the capital stock of American Tripoli Corporation of Seneca, Missouri, according to an announcement by General Clinton F. Robinson, president of Carborundum in Niagara Falls, N. Y.

The American Tripoli Corporation owns deposits of and a plant for the production of "Seneca Standard" Tripoli, an unusual form of silica found in the foothills of the Ozark Mountains.

Applications for "Seneca Standard" Tripoli include buffing and polishing compounds, lacquer finishing compounds, metal polishes, foundry parting, detergents, cleaners, polishing cloths, and so on. Research is presently developing additional uses for this remarkable mineral as a catalyst carrier in petroleum cracking and other industries.

At a recent meeting of **CHANDEYSSON ELECTRIC COMPANY** distributors, a portrait of Dr. Pierre I. Chandeysson was unveiled. Dr. Chandeysson was founder and former president of the company bearing his name.

After a brief ceremony commemorating the 50th anniversary of the Chandeysson Company, the photo was placed in the company's reception room.



Shown are two of Dr. Chandeysson's children, Robert, 15, and Carol, 16, with James F. Carland, company executive vice president.

HOUGHTON LABORATORIES, INC., of Olean, New York, has announced the installation of new automatic equipment for fast production coating with plastisols at its Smethport, Pa., plant.

The expanded facilities now offer users of coatings two advantages: Houghton manufactures the required Hysol plastisol for any specific purpose; Houghton will process the articles with high-speed automatic equipment.

The modern coating equipment can be adapted to a wide range of articles including dish racks, wire baskets, egg trays, glass tube carriers, springs, toys, gloves, electrical components and all industrial coated items. In addition, Houghton Laboratories offers the services of experienced technical personnel to recommend the exact Hysol coating to meet specific requirements.

DETREX CORPORATION of Detroit, manufacturer of industrial cleaning equipment and chemicals, is now supplying customers who use its phosphate coatings with a new point-of-sale sticker to identify products protected by the Detrex Paint Bond Process.

The die-cut sticker, lithographed in three colors, is designed to be attached to products of manufacturers of domestic appliances and metal products.

Detrex Paint Bond No. 79, which is used to clean metal parts prior to painting, also deposits fine-grained phosphate crystals of iron phosphate that become chemically interlocked with the metal itself.

This base coating contains billions of microscopic crevices into which the paint flows and is securely locked. The result, discovered by Detrex research chemists, is that better paint adhesion is obtained, corrosion is prevented, and blistering due to oxidation under the paint film is virtually eliminated, even when paint surface is ruptured.

Products thus treated with Paint Bond have a smoother, better looking finish, greater service life, and better eye appeal, Detrex reports.

29 Years of Experience In the Sale and Service of

CHEMICALS TO CLEAN and PREPARE METAL for PAINTING

Surphos — CLEANER and PRODUCER OF PHOSPHATE COATINGS.

Sol-Klean — PHOSPHORIC ACID RUST REMOVER AND ETCHER.

Industro — ALKALI CLEANERS, STRIPPERS and AIR WASH COMPOUNDS.

Industrosolv — SOLVENT EMULSIONS FOR SPRAY WASHING MACHINES.

SOL-KLEAN prepares steel and aluminum for painting, removing rust, oxide and oil. It etches the metal and gives a thin phosphate coating. One volume of Sol-Klean, diluted with 3 volumes of water, usually brushed on the metal at room temperature. It penetrates oil and dissolves rust. Sol-Klean is removed together with the dissolved oil and rust by wiping with rags or flushing with water. Metal may also be cleaned and treated by immersion in hot Sol-Klean and rinsing in water. Sol-Klean is non-inflammable and evolves no toxic or corrosive fumes.

SURPHOS cleans and produces a phosphate coating on sheet steel, machined and cast iron. It anchors the paint finish and increases its humidity and salt spray resistance. Use hot (one ounce per gallon solution) in Power Wetting Machine or dip tank. Acid proof equipment not needed.

NOTE:

Consult Us On Your Government Specification Requirements

INDUSTRIAL CHEMICAL PRODUCTS COMPANY

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Representatives In Principal Cities

IN CANADA, MADE AND SOLD BY BOYLE CHEMICALS LTD. LONGBRANCH, ONT.

Harold R. Smallman

In a move to expand its west coast activities, **HANSON-VAN WINKLE-MUNNING CO.**, Matawan, New Jersey, has acquired the assets, customer lists, good will, personnel and existing business of the Electroplating Equipment & Supply Division of the **A. J. LYNCH CO.** in California.

This expansion is a logical outcome of previous association with the Lynch Company as the H-VW-M distributor in the San Francisco and Los Angeles areas. H-VW-M will utilize warehousing and shipping facilities of Lynch and maintain offices in Lynch buildings at Los Angeles and San Francisco.

HAROLD R. SMALLMAN, assistant vice president of H-VW-M, will continue supervision of comapny activities on the west coast. Three Lynch salesmen join H-VW-M. They are **WILLIAM A. NAIRNE** and **G. STUART KRENTEL**, who will cover the Los Angeles territory, and **A. H. NICHOLSON**, who will continue serving the San Francisco area.

Distribution of H-VW-M products in Seattle will still be handled by the **CARL F. MILLER CO.**, and in Portland by the **ZEHRUNG CHEMICAL CO.**

H-VW-M, originating in 1820, is one of the world's leading manufacturers of electroplating and polishing processes, equipment and supplies. With plants in Indiana and New Jersey, the company maintains sales offices in all principal cities in the United States.

The **PROMAT DIVISION** of **POOR & COMPANY**, Waukegan, Illinois, has announced the appointment of the Swift Industrial Chemical Company of Canton, Conn., as eastern sales representatives for the Promat line of metal finishing processes. Included will be Probrite-White Alloy, Promat copper, cadmium, and zinc electroplating processes and Promat chromate treatments.

The Swift organization has been active in the manufacture and sale of metal finishing, treating, cleaning and descaling compounds since 1949. John A. Swift, president and technical director, a 1928 M.I.T. gradua'e, has served as assistant works metallurgist for the American Steel and Wire Company and chief metallurgist for the Billings and Spencer Company. He is currently active as chairman of the Hartford Chapter, ASM and chairman, New England Conference, AIMME.

NEW POSITIONS

Bruno D. Hendrickson

Norton Company of Worcester, Mass., has named **BRUNO D. HENDRICKSON** abrasive engineer in charge of the western New York territory.

Mr. Hendrickson was formerly an engineer in the Sales Engineering Department. He first came to Norton in 1929, working as a mail boy, a clerk in the order department and supervisor before going into sales engineering work. He has written several technical articles and bulletins and helped revise several of Norton's educational booklets.

Mr. Hendrickson replaced Edward J. Lalor, who resigned to become a member of the firm of Oliver Abrasive and Tool Company, Inc., of Buffalo, a Norton distributor.

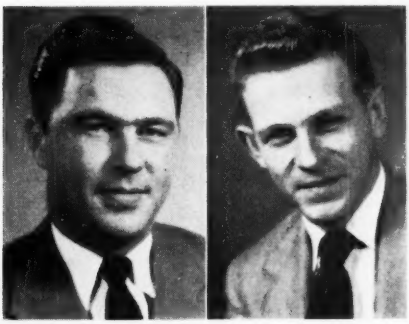
Donald S. Gaarder

The appointment of **DONALD S. GAARDER** as general manager of the Industrial Sales Division of The Sherwin-Williams Co., has been announced by Vice President A. H. Burt, sales director. Mr. Gaarder was promoted from the position of assistant general manager to succeed G. L. Hehl, veteran head of the division, who is ill.

Mr. Gaarder formerly was manager of the new products department of the Industrial Sales Division. After grad-

uating from St. Olaf's College and post-graduate work at the University of Wisconsin, he joined Sherwin-Williams in 1936 as a research chemist at Chicago.

Norton Company, Worcester, Mass., has announced two appointments in its sales force. **JACK M. ESTEN** has been appointed an abrasive engineer and **ROBERT C. DIVOLL** has been named a field engineer. Both are recent graduates of the sales training course.



Robert C. Divoll (left), Jack M. Esten

Mr. Esten will be responsible for the territory which includes North Carolina, South Carolina, Virginia, and part of Tennessee.

Mr. Divoll will assume the duties of field engineer working out of the Pittsburgh District Office.

Chandeysson Electric Company, St. Louis, has announced the appointment of **MATTHEW H. CONWAY** as mechanical engineer.

During the past nine years, Mr. Conway has served as drafting supervisor and engineer for the company. Prior to his connection with Chandeysson, he was in charge successively, of the drafting department, tool design department, production control department, and mechanical design department of a St. Louis shoe machinery company.

RICHARD R. RUSSELL has been appointed a sales engineer for The Udylite Corporation, it was announced by Clem H. Hohner, Udylite's Atlanta (Ga.) manager.

Mr. Russell received a bachelor of science degree in marketing from the University of Detroit and has served one year in the U. S. Army. With headquarters at the Udylite branch office in Atlanta, he will contact customers in the South Carolina, North Carolina and eastern Tennessee area.

Richard R. Russell

Industrial Filter & Pump Manufacturing Company, Chicago 50, Illinois, has announced the transfer of **K. C. JOHNSON** from the home office to the Pacific coast as regional field engineer. He will work out of the company's office at 816 West 5th Street, Los Angeles, and also the office at 115 New Montgomery Street, San Francisco, California. Mr. Johnson joined Industrial in 1949 and most recently was assistant chief engineer. He is a member of the executive committee of the Western Society of Engineers.

J. C. Hesler (left), K. C. Johnson

J. C. HESLER has joined the engineering staff of Industrial as head of the expanded Water and Waste Treatment Division. Besides a complete engineering service, this division of the company offers zeolite, filter, demineralizer units and the other equipment used in the

treatment of municipal and industrial water supplies and also the disposal and recovery of chemical wastes from industrial operations. Mr. Hesler comes to Industrial with 15 years' experience in the water and waste treatment field as research chemist, chief chemist, project and design engineer and in field engineering work.

Henry M. Stevens, New England Branch manager for Frederic B. Stevens, Inc., has announced the appointment of **ELMER F. KING**, as a metal finishing sales representative in that area.

Mr. King attended the University of Bridgeport and graduated with a major in Sales and Marketing. He has completed the training course in the various lines of automatic annd auxiliary metal finishing equipment manufactured by the Stevens organization.

ARTHUR H. KIRKPATRICK has been promoted to the newly created position of special project engineer at Frederic B. Stevens, Inc., Detroit 16, Michigan.

Mr. Kirkpatrick will work on the many new potential applications of Stevens automatic processing equipment presently being considered. Automation in metal finishing and waste disposal applications will also be included in his activity.

Elmer F. King (left), Arthur H. Kirkpatrick

Before joining the Stevens organization in 1946, Mr. Kirkpatrick was district sales manager for Ilg Electric Ventilating Co., for nearly 10 years. Prior to that he was employed by Lincoln Electric Co. and the Lamp Works of General Electric Co., both of Cleveland, Ohio. He is an Electrical Engineering graduate from the University of Michigan, Ann Arbor.

A member of the Detroit Branch, American Electropiaters' Society and the Electrochemical Society, he also retains membership in the Engineering Society of Detroit, Illuminating Engineering Society, American Society of Heating and Ventilating Engineers and Electrical Association of Detroit.

The election of **GEORGE L. GUYMON** to the board of directors has been announced by the Industrial Filtration Company, Lebanon, Indiana.

George L. Guymon

Mr. Guymon, vice president and director of sales for Delpark Industrial Filters was associated with the Honan-Crane Corporation of Lebanon prior to his affiliation with the Industrial Filtration Company.

Mr. Guyman introduced the Delpark Automatic Filter to the trade in 1950. He is recognized throughout industry for his knowledge of purification and filtration engineering.

The J. J. Siefen Company has announced the appointment of **CLARENCE A. DeGROAT** as sales manager. Mr. De Groat has worked as salesman for the company for seven years in Michigan and Ohio.

The appointment of **CAMERON ELLIOTT** in the Northern Ohio territory also has been announced. His address is 1241 Sunset Road, Mayfield Heights, Ohio.

F. G. MERCKEL has been elected president; **R. M. JACKSON**, executive vice president and treasurer; and **G. D. PEET**, vice president in charge of Product Engineering and Development, according to an announcement made by M. F. Tiernan, chairman of the board of Wallace and Tiernan Incorporated.

G. D. Peet (left), R. M. Jackson and F. G. Merckel

Mr. Merckel, an engineer by training, has been with the Wallace & Tiernan group in various executive and sales capacities for nearly thirty-five years. For the past two years he has been president of W. C. Hardesty Co., Inc., a Wallace & Tiernan subsidiary. He is well known throughout all the fields of Wallace & Tiernan and Novadel activities, and brings to his new job a broad experience in management, sales, research and legal matters.

Mr. Jackson has been associated with the organization for over twenty years. He has been treasurer for the past several years and in that capacity has been active in overall management.

Mr. Peet has been with Wallace & Tiernan almost since its inception and is a valued member of the management team. He has been chief engineer as well as an officer of subsidiary companies.

It was also announced by Mr. Tiernan that **WM. J. ORCHARD,** long time general manager of Wallace & Tiernan and vice president of Novadel, who reached his 65th birthday last month, will remain on the board of Wallace & Tiernan but will retire from active management.

T. R. Gill

THE G. S. EQUIPMENT COMPANY, 5317 St. Clair Avenue, Cleveland, Ohio, has been organized to serve the metal finishing industry with new equipment of its own design and manufacture as well as other national makes, according to **T. R. GILL,** vice president and general manager.

It was organized by the officers and directors of **THE GENERAL SUPPLY COMPANY,** same address, and will take over all equipment sales formerly handled by that firm. The General Supply Company continues to serve the metal finishing industry with supplies only.

The new corporation is developing many new units of equipment, one of which is a plating barrel.

M. E. Powers

M. E. POWERS has been appointed manager, Government Sales Department of the J. B. Ford Division of Wyandotte Chemicals Corporation. Mr. Powers will supervise the selling of laundry detergents and alkalies, aircraft and ordnance metal cleaning products, paint strippers, tank desealants, de-icing solutions, dishwashing products, maintenance and general cleaners, germicides, insecticides, and specially formulated alkaline materials to all government agencies. He will headquarter at Wyandotte, Michigan, and will work closely with the personnel of the new Wyandotte Chemicals Research Center in the development of products to meet military specifications.

Mr. Powers has done graduate work at Boston College where he majored in Chemistry. He also studied accounting and contract law at Boston University. Joining Wyandotte Chemicals in 1940, Mr. Powers became manager of the New England sales office in 1946. From 1942 to 1945 Mr. Powers served 41 months in the U. S. Navy and was discharged a

Lt. Commander. He specialized in the installation of electronic air navigation aids and for the last combat year headed this program in the Navy Department.

Eugene N. Jarvis

The Grav-i-Flo Co., Sturgis, Michigan, manufacturer of barrel tumbling equipment and supplies, has announced the appointment of **EUGENE N. JARVIS,** as factory sales and service representative in the Southeastern Michigan area.

Mr. Jarvis joins the Grav-i-Flo Corporation with many years' experience in the metal finishing field. His headquarters will be at the Wagner Brothers offices, 432 Midland Ave., Detroit. Wagner Brothers Company has added the Grav-i-Flo line to its line of plating and polishing equipment and supplies.

At the recent annual meeting of the board of directors of the **MAGNUS CHEMICAL COMPANY, INC.,** manufacturer of industrial cleaning materials, metal working lubricants and metal cleaning equipment, **ROY D. KING** and **MARCEL ZINTY** were elected vice presidents of the company.

Mr. King, manager of the Railroad Division of Magnus for the past 5 years, was made vice president in charge of Railroad Sales and Development.

Mr. Zinty, who before coming to Magnus as manager of the Equipment Division, was chief engineer of Mabor and Company, Paris, France, was made vice president and general manager of the Equipment Division.

EUGENE L. COMBS has been appointed supervisor of chromic acid sales for Diamond Alkali Company according to an announcement by John S. Cort, Jr., sales manager of the Chromium Chemicals Division.

Mr. Combs has been engaged in the production, engineering, and technical sales and service phases of the electroplating and metal finishing industries for the past 17 years.

From 1942 to 1947, Mr. Combs was assistant supervisor in the electrochemical engineering division of Battelle Memorial Institute, Columbus. Previously associated in various production capacities with the Curtiss Wright Corp., Airplane Division, at Columbus, and the D. L. Auld Co., Inc., of Columbus. Mr. Combs has been with Diamond Alkali since 1950.

A member of the Cleveland Branch, American Electroplaters' Society, Mr. Combs is a past member of the Dayton Branch, and a charter member, past president and treasurer of the Columbus Branch. Ohio Chairman for the Finance Subcommittee of the A. E. S. Research Committee, he is also serving as general chairman of the A. E. S. Convention and Industrial Finishing Exposition to be held in Cleveland in 1955.

Promotion of **GEORGE D. COCKCROFT** to the position of assistant sales manager of coated abrasives and related products in the Atlanta branch has been announced by Minnesota Mining & Manufacturing Co., St. Paul, Minnesota.

Mr. Cockcroft joined 3M in New York in 1942. The following year he was transferred to the coated abrasives and related products sales force and assigned a territory near High Point, N. C.

RICHARD H. COLE has been appointed technical service engineer for the automotive trades by the coated abrasives and related products division of 3M.

Mr. Cole has been a salesman serving the automotive trades in the Des Moines area since joining the firm in 1950. In his new position he will headquarter in St. Paul.

MEETINGS

The **ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **BALTIMORE-WASHINGTON BRANCH, A. E. S.,** will be held at the Lord Baltimore Hotel, Baltimore, Maryland, on Mar. 13.

The Educational Session, beginning at 2:00 P.M., will feature the following speakers and subjects:

"Unusual Plating Problems and Their Solutions," Myron B. Diggin, director of research, Hanson-Van Winkle-Munning Company.

"Nickel Plating," Dr. Richard Salton-

A. E. S. FIRST ANNUAL TRI-STATE REGIONAL MEETING, Hotel Sheraton-Gibson, Cincinnati, Ohio, April 3, 1954.

stall, technical director, The Udylite Corporation.

"Aluminum Anodizing," Herberth Head, member of production manager's staff, Automotive Body Division, Chrysler Corporation.

Dinner will be served at 7:00 P.M. The guest of honor will be Supreme President Dr. George P. Swift, who will be inducted into the Order of the Pot with due ceremony.

Dr. George P. Swift

Emphasizing the growing importance of the electroplating and finishing industry in the tri-state area of which Cincinnati is the approximate geographical center, the **CINCINNATI BRANCH, A. E. S.** is acting as host for the **FIRST ANNUAL TRI-STATE REGIONAL MEETING,** to be held on April 3 in the Hotel Sheraton-Gibson, Cincinnati.

The Educational Session will be held at 2:00 P.M. with **DR. GEORGE P. SWIFT,** Supreme President of the A.E.S., serving as session chairman.

The following talks will be presented at the Educational Session:

"Hard Chrome Plating," by Arthur W. Logozzo, president of Nutmeg Chrome Corp., West Hartford, Conn.

"Paint Finishing of Plated Surfaces," by J. M. Andrus, chief chemist, Croname, Inc., Chicago, Ill.

"Vacuum Metallizing," J. Gordon Seiter, F. J. Stokes Machine Co., Philadelphia, Pa.

A Dinner Dance will be held in the Roof Garden of the hotel, with dinner being served at 7:00 P.M. An entertainment program will follow the dinner. Tickets for the Dinner Dance, at $7.50 per person, may be obtained from Gordon T. Speers, 1203 Fifth Ave., Dayton, Kentucky. Table reservations will be made at the time tickets are purchased.

J. M. Andrus

J. Gordon Seiter

The entire program is being sponsored by the **CINCINNATI, COLUMBUS, INDIANAPOLIS,** and **LOUISVILLE BRANCHES** of the **AMERICAN ELECTROPLATERS' SOCIETY.** The committee, under the capable leadership of **W. WILSON LOVELESS,** Varland Metal Service, Inc., **D. L. TAYLOR,** Sealtron Corp., and **A. R. WATERS,** Harshaw Chemical Co., has planned carefully to make this affair an outstanding success.

Working with the other members of the committee are representatives of the cooperating branches; **RICHARD JAGER,** Columbus Branch; **HERBERT KENNEDY,** Indianapolis Branch; and **WILLIAM B. DRAKE,** Louisville Branch.

Arthur W. Logozzo

W. Wilson Loveless

THE 1954 SPRING CONFERENCE of **THE INTERNATIONAL ASSOCIATION OF ELECTROTYPERS & STEREOTYPERS, INC.,** will be held on April 6 and 7 at the Hotel Sheraton-Gibson, Cincinnati, Ohio. The board of directors will meet at 9:30 A.M. on Tuesday, April 6, and the opening session is scheduled for 2:00 P.M. on that day.

The high point of the conference will be the first showing of "The Electrotype, The Precision Printing Plate," a color-sound movie tracing historically the development of written communication, and showing actual production of today's letterpress precision relief printing plate.

THE MILWAUKEE BRANCH, A.E.S., will hold its **ANNUAL EDUCATIONAL SESSION AND BANQUET** on Saturday, April 24, 1954, at the Schroeder Hotel, Milwaukee.

"Metal Finishing in Today's Competitive Market," will be the theme of the program. Papers to be presented are as follows:

C. O. Hutchinson

"Bright Nickel Plating in Today's Competitive Market," by Arthur M. Linn of United Chromium, Inc.

"Organic Finishing for Today's Competitive Market," by C. O. Hutchinson, Sales Manager, Nubian Industrial Division, The Glidden Company.

"Stainless Steel in Today's Competitive Market," by Ken Huston, Rustless Division, Armco Steel Company.

"Plating in Today's Competitive Market," by Louis J. Minbiole, Jr., Assistant Sales Manager, Udylite Corp.

K. M. Huston

The program will begin at 10:00 A. M.; lunch will be served at 11:30 A. M., and the afternoon session is scheduled for 1:30 P.M. The evening banquet and entertainment will start at 7:00 P.M.

The **41ST ANNUAL CONVENTION** of the **AMERICAN ELECTROPLATERS' SOCIETY,** under the sponsorship of the New York Branch, will be held at the Hotel Statler, New York City, July 12-15.

A. N. Braun

Arrangements are being made for the various branches to exhibit unusual and exceptionally interesting products.

GEORGE COOPERMAN, chairman of the Exhibits Committee, reports that, based on the outstanding response from many of the branches assuring him of their intentions to exhibit plated specimens, this should be the most exceptional exhibit ever displayed at an annual convention. George requests that secretaries who have not replied to his letter regarding the exhibit please do so at their earliest convenience.

The New York Branch looks forward to receiving many exhibits from local firms. There are probably more diversified types of electroplating done in the New York area than in any other part of the United States. Such operations as plating of cadmium, nickel, chromium, gold- silver, and rhodium, are quite common. A number of plants doing other types of finishing such as vacuum metallizing and organic types of coatings are located in the area. Barrel plating installations are numerous and quite large. Some plants, though quite small, still carry on in color finishing of medallions, and bas reliefs. This area still boasts of some job shops which do torch coloring, hand relieving of bronzes in greens, blues and the regular bronzing operations. Finishes such as "Mother-of-pearl," and other oxidized finishes on silver are also done.

In New York is one plant which has no generator, but since it has direct current available, works by means of electric light bulbs to control the current supply in its plating baths. This plant does refinishing of musical instruments and has gained a reputation as one of the best refinishing shops on this type of work in the area.

The largest collective group of job shop owners in the area is the **MASTERS' ELECTRO - PLATING ASSOCIATION, INC.** Any type of finishing can be done

Joseph J. Duffy, Jr.

George Cooperman

by at least one member of this group. The M.E.P.A. has pledged itself to two tasks: first to furnish customers with the best quality of work; second, to further the interests of the industry. Officers of the group are **PHILIP RANNO,** chairman of the executive committee. **ALFRED D'AGOSTINO,** vice chairman; **FRANK KAISER,** treasurer; and **SILVIO C. TAORMINA,** executive secretary.

Metal Finishing Suppliers' Association

The support of A.E.S. activities by the industry's manufacturers and distributors is extensive throughout the whole year, but is especially evident and instrumental in the success of each year's annual convention.

The Association's first activity will be the Annual Fellowship Luncheon and business session on Monday, July 12, the first day of the convention, which is open to supply houses and all representatives catering to the industry.

That evening the M.F.S.A. will again sponsor the Fellowship Open House Party, which is always a highlight of the convention. **A. N. BRAUN** is president of the M.F.S.A.

JOE DUFFY, our perennial Golf Chairman, is busy making arrangements for the golf tournament which will be held during the convention.

SOCIETIES

The **MILWAUKEE BRANCH** of the **AMERICAN ELECTROPLATERS' SOCIETY** held its **20TH ANNUAL WALTER PINNER DINNER** on Jan. 8, 1954, at the Milwaukee Elks Club. One hundred members and guests were present to hear Walter Pinner report on the progress of A. E. S. Research Project No. 15, of which he is project director. This research project has as its object the development of an entirely new test for measuring corrosion resistance of electroplated coatings. It is a cooperative project, conducted at no expense to the A. E. S., and carried out through the efforts of the committee members and the companies where these members are employed.

Mr. Pinner also described some interesting work on corrosion which is in progress at the Process Development Div., Houdaille - Hershey Corporation. This division, of which Mr. Pinner is manager, coordinates technical control of manufacturing with process development in metallurgical, electrochemical, painting and fabrication activities.

Walter L. Pinner, a past president of the American Electroplaters' Society, is

At the speaker's table for the 20th Annual Walter Pinner Dinner may be seen (left to right): Walter Kessler, Pabst Brewing Co.; Judge William O'Neill; Walter L. Pinner; Glen A. Schwemer, Electro-Platers Co., who served as toastmaster.

widely known in the finishing field. He is the first American to be elected to honorary membership in the Institute of Metal Finishing of England. He has attended International Conferences on Electrodeposition in England and has presented several papers before the Institute of Metal Finishing.

Dr. D. Gardner Foulke

Dr. C. Fred Gurnham and Dr. D. Gardner Foulke as member and alternate, respectively, attended the January 14-15 meeting of the **NATIONAL TECHNICAL TASK COMMITTEE ON INDUSTRIAL WASTE** in Cincinnati, representing the metal finishing industry by virtue of appointment by A.E.S. President Dr. George P. Swift.

Created by an Act of Congress to stimulate more effective working conditions and relationships on the technical phases of the work of improving the quality of waters between industry and federal, state and local governmental agencies, the NTTCIW is concerned with promoting research on utilization, treatment and control of industrial wastes.

Dr. C. Fred Gurnham

All industrial operations have been grouped into four major classes with electroplating and metal finishing falling into the Chemical Processing Group. Dr. Gurnham was elected chairman of this Task Group.

Dr. Foulke is manager of electrochemical development for Hanson-Van Winkle-Munning Co., Matawan, N. J. Dr. Gurnham is head of the Chemical Engineering Dept., Michigan State College. He is

This photo was made at the January meeting of the **JAPANESE ELECTROPLATERS' SOCIETY**, held in the society headquarters in Tokyo. In the background, standing, is Dr. Sakae Tajima, head of the Electrochemistry Department of Tokyo Metropolitan University. In the right foreground, with his back to the camera, is Jiro Takahama, secretary of the society, and editor of the society's journal "Mekki" (Plating).

(Photo by N. Ohsawa, Ohsawa Barrel Plating Works, Toyko, Japan)

a Consulting and Contributing Editor of PRODUCTS FINISHING.

The **42ND ANNUAL EDUCATIONAL SESSION AND BANQUET** of the **CHICAGO BRANCH, A.E.S.,** was held Jan. 30, in the Conrad Hilton Hotel. Held concurrently with the A.E.S. sessions was the **FIRST MANAGEMENT SEMINAR** of the **NATIONAL FEDERATION OF METAL FINISHERS.**

Carl F. Hansen, Advance Tinning Co., served as chairman of the Management Seminar (Fig. 1). The first speaker was S. J. Fecht, president of S. J. Fecht & Associates, who spoke on "Work Simplification Programs for the Metal Finisher." His paper is presented in full in this issue of PRODUCTS FINISHING, beginning on page 38.

Other papers presented at the Management Seminar were: "Laying Out Production Lines for a Job Shop," by John B. Thornsen, Atwood Vacuum Machine Company; "Budgetary Controls for Small Business Establishments," by H. J. Hubenthal, Electran Mfg. Company; and "Organizing Your Business for Tax Advantages," by Max Becker, Max Becker & Company.

Approximately 200 job shop owners and managers attended the excellent sessions of this first Management Seminar. In addition to the Chicago area, the states of Illinois, Indiana, Iowa, Kentucky, Maryland, Ohio, Minnesota, Missouri, Kansas, Michigan, Nebraska, New York, and Wisconsin were represented.

The first speaker at the A.E.S. Educational Session was Lloyd Gilbert, Rock Island Arsenal, who discussed, "Alkaline Derusting as a Modern Plating Tool." Mr. Gilbert discussed some of the rust removal jobs which had been accom-

Fig. 1—Carl F. Hansen, Advance Tinning Co., served as chairman of the NFMF Management Seminar.

Fig. 2—Lloyd Gilbert, Rock Island Arsenal, answered a number of questions from the floor following his talk on Alkaline Derusting. Dr. Russell E. Harr, educational chairman, is at left.

Fig. 3—Dr. Allen G. Gray, in discussing the plater's future nickel restrictions, offered several constructive suggestions for solutions to the problem. At the same time, Dr. Gray, who for many years served as Consulting and Contributing Editor of PRODUCTS FINISHING, pointed out how complicated the nickel problem has become, and how it affects many segments of American industry. Dr. Harr is seated at Dr. Gray's right.

plished by cathodic electrolysis in alkali fluoride, alkali cyanide, and other alkaline solutions. Stressing the possibilities of the process, he covered also some of the equipment required.

Dr. Allen G. Gray, technical editor of "Steel," discussed, "What's Ahead in Plating?" He painted a very bleak picture for nickel platers, pointing out that the Office of Defense Mobilization estimates that from 6 to 10 per cent LESS nickel will be allocated to the plating industry in 1954 than the industry received during 1953. Dr. Gray outlined the way in which the steel industry fits into the nickel situation, and suggested some ways in which platers were meeting the nickel restriction.

The third paper presented at the Educational Session was a most interesting summary of, "Organic Finishes Based on Epon Resins," by Harry W. Howard, Shell Chemical Corporation. Mr. Howard showed that the Epon resins differed as to physical properties from other resins, and then described the properties and characteristics of many different kinds of organic finishes formulated with Epon resins. He was able to illustrate his remarks by referring to his display of a number of commercial products which had been finished in Epon resin coatings.

The Banquet following the Educational Session was attended by over 1250 members and guests, and featured an excellent entertainment program. At the Banquet, the award of "Platings' Man of the Year" was presented to Lawrence J. Hay, president of Plating Service Co., Chicago, by the Chicago Electro-Platers Institute. The CEPI is an association of over 100 custom electroplating shops in the Chicago area.

Lawrence J. Hay

The February 12 meeting of the **TORONTO BRANCH, A.E.S.**, was held in the Royal York Hotel, Toronto. On that oc-

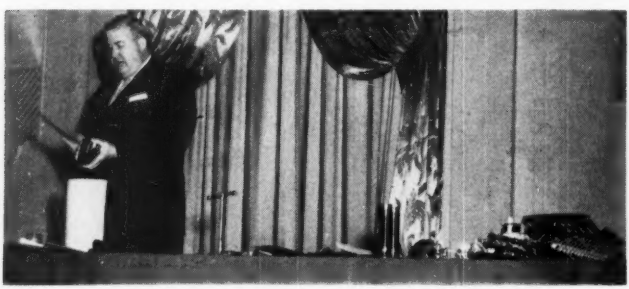


Fig. 4 — Harry W. Howard, Shell Chemical Corporation, demonstrates the resilient and non-fragile nature of Epon resins by striking a piece of Epon resin with a hammer. At Mr. Howard's right can be seen examples of Epon resin finish coated articles, including some plating racks insulated with an Epon resin rack insulation material.

casion the national officers and delegates to the Third Annual A.E.S. Interim Meeting were guests of the Toronto Branch at the dinner preceding the meeting (Fig. 1).

At the meeting following the dinner approximately 60 Toronto Branch members and over 40 A.E.S. officers and delegates heard V. L. Richards, works manager, Canadian Hanson & Van Winkle Co., Ltd., discuss, "Low Voltage, Direct Current Rectifiers in the Plating Industry." Mr. Richards (Fig. 2) demonstrated some of the points made in his treatise and distributed diagrams further illustrating his remarks.

The **THIRD ANNUAL INTERIM MEETING** of the **AMERICAN ELECTROPLATERS' SOCIETY** was held in the Royal York Hotel, Toronto, Canada, on February 13, 1954. Over 50 A.E.S. national officers and delegates from A.E.S. branches attended the meeting.

In addition to the presentation of reports by national officers, the meeting considered at some length the preparation of a Branch Officers' Manual. Reports were submitted by a number of delegates who are contributing chapters to the Manual.

Following a luncheon at which the

Fig. 1—A view of the Toronto Branch members and guests assembled for dinner. A.E.S. national officers and Toronto Branch officers are seated at the speakers' table in the background.

Fig. 2 — V. L. Richards, Canadian Hanson & Van Winkle Co., Ltd., presenting his paper on direct current rectifiers. Shown (left to right) are: Ed Hathaway, who assisted Mr. Richards with the demonstration; V. L. Richards; John Acheson, toastmaster; Ben Cameron, president, Toronto Branch.

Fig. 3—A view of the Toronto Branch members and guests assembled to hear Mr. Richards' paper.

(PRODUCTS FINISHING Staff photos.)

Fig. 1—Dr. George P. Swift, A.E.S. President, conducted the Third Annual Interim Meeting.

delegates were guests of the Society, reports were submitted on the subject of broadening the scope of the A.E.S. and progress of A.E.S. Research.

Nominated for the office of third vice president of the A.E.S. were Leslie Dively, Milwaukee Branch; Francis T. Eddy, Waterbury Branch; and Tom Evans, Indianapolis Branch. Reports were heard on the progress of the 1954 National Convention, scheduled to be held in New York City, the 1955 Convention and Exposition to be held in Cleveland, and the 1956 Convention to be held in Washington, D. C.

An invitation was extended by the Cincinnati Branch, to hold the 1958 Convention in Cincinnati, Ohio.

Just prior to the close of the meeting, the delegates observed a moment of sil-

Fig. 2—(Below) A view of the luncheon held for the A.E.S. delegates.

Fig. 3—This view of the delegates' luncheon shows (in the right foreground) Ed Bruck, Indianapolis Branch; C. F. Nixon, A.E.S. past president; H. E. Head, Detroit Branch; Tom Evans, Indianapolis Branch; and L. R. Critchfield, Cincinnati Branch.

Fig. 4—Myron B. Diggin, Newark Branch, read the George B. Hogaboom Memorial Resolution as the last item of business at the Third Annual Interim Meeting of the A.E.S. *(PRODUCTS FINISHING Staff Photos)*

ence in honor of the memory of George B. Hogaboom, after which a resolution honoring Mr. Hogaboom was presented by Myron B. Diggin, Newark Branch, and unanimously approved by the delegates.

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OF INTEREST TO FINISHERS

Mar. 13. Annual Educational Session and Banquet, Baltimore - Washington Branch, A.E.S., Lord Baltimore Hotel, Baltimore, Maryland.

Mar. 15-19. Tenth Annual Conference and Exhibition, National Association of Corrosion Engineers. Kansas City, Mo. For further information contact A. B. Campbell, Executive Secretary, NACE, 1061 M & M Bldg., Houston 2, Texas.

Mar. 24-Apr. 1. American Chemical Society, 125th National Meeting, Kansas City, Mo.

Apr. 3. A.E.S. First Annual Tri-State Regional Meeting, Hotel Sheraton-Gibson, Cincinnati, Ohio. Sponsored by Cincinnati, Columbus, Indianapolis, and Louisville Branches.

Apr. 3. Rockford Branch, A.E.S., Annual Educational Session and Banquet, Hotel Faust, Rockford, Illinois.

Apr. 6-7. 1954 Spring Conference, The International Association of Electrotypers & Stereotypers, Inc., Hotel Sheraton-Gibson, Cincinnati, Ohio.

Apr. 21-24. Fourth International Conference on Electrodeposition and Metal Finishing, sponsored by **The International Council for Electrodeposition.** Hotel Russell, London, England.

Apr. 24. Milwaukee Branch, A.E.S., Annual Educational Meeting and Banquet, Schroeder Hotel, Milwaukee, Wisconsin.

Apr. 27. Association of Consulting Chemists and Chemical Engineers, Inc., Symposium and Banquet, Hotel Belmont Plaza, New York, N. Y. For further information contact A. B. Bowers, Director of Publicity of the Association, 50 East 41st St., New York 17, N. Y.

May 1. Boston Branch, A.E.S., 18th Annual Banquet and Technical Session, Hotel Statler, Boston, Mass.

May 2-6. Electrochemical Society, Spring Meeting, LaSalle Hotel, Chicago, Ill. Technical sessions will include pa-

pers on electric insulation, electronics, electro-organic chemistry, industrial electrolytics, and theoretical electrochemistry.

May 15. Indianapolis Branch, A.E.S., 11th Annual Dinner Dance, Indianapolis Athletic Club, Indianapolis, Indiana.

May 15. A.E.S. New England Regional Educational Session and Banquet, Hotel Bond, Hartford, Connecticut.

May 17-20. Basic Materials Conference and **Basic Materials Exposition,** International Amphitheatre, Chicago, Illinois. Advance registration cards may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, New York.

June 7. Institute of Cooking and Heating Appliance Manufacturers, 22nd Annual Convention and Exhibit, Netherland Plaza Hotel, Cincinnati, Ohio.

June 14-18. 1954 Annual Meeting, American Society for Testing Materials, Sherman and Morrison Hotels, Chicago.

Jul. 12-15. 41st Annual Convention American Electroplaters' Society, Hotel Statler, New York City.

HONORS

The annual Bob Weaver Award of Ferro Corporation was presented to four of Ferro s personnel at a dinner held at the Union Club here, December 15th. Presentation of the awards was made by Robert A. Weaver, chairman of the board of Ferro, for whom the award is named.

Named as this year's winners are **RUSSELL W. FRANK,** safety director, Ferro, Cleveland, for contributing to an outstanding safety record in all divisions of Ferro Corp.; **RUSSELL A. WHITEMAN,** chief process engineer, Tuttle & Kift, Inc., Chicago, for reducing scrap and rework at this Ferro subsidiary; **BERNARD A. McDERMOTT,** Ferro plant manager, Nashville, for his outstanding contribution to the reorganization of Ferro Powdered Metals, Inc.; **EDWARD J. RILEY,** foreman, Stabilizing Department, Ferro Chemical Corp., Bedford, Ohio, for substantially raising production and quality standards at his division.

Established in 1947 in honor of Mr. Weaver, the award is given annually to the employees who have made the greatest contribution to Ferro's advancement during the year. The award consists of a cash consideration and a certificate.

Also presented at the dinner were six Ferro Service Pins awarded to corporation employees for Ferro service of one, three and five years, and every five-year increment thereafter, up to thirty-five.

NECROLOGY

ALLAN H. BUTZ, 51, vice president of the International Division of Minnesota Mining & Manufacturing Co., died Feb. 15 at Del Ray Beach, Florida, while vacationing with members of his family.

Mr. Butz joined 3M in 1925 as a laboratory helper. He became acting sales manager of the New York office in 1928 and sales manager in 1930.

He was promoted to eastern sales manager for the company in 1936 and eastern regional manager in 1944 when he moved to St. Paul. In 1951 Mr. Butz was made vice president in charge of sales in the 3M International Division. He helped establish branch offices throughout the world and traveled extensively in Europe and South America.

Shown (left to right) are: Robert A. Weaver, Russell A. Whiteman, Bernard A. McDermott, Edward J. Riley, and Russell W. Frank.

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The new movie illustrates advantages gained by the respective companies when they utilized the latest developments in lacquer techniques. A typical example is the sequence about Besly-Welles Corporation, manufacturer of machine tools, which shows how they reduced their finishing operation from 13 to 6 stages through installation of a modern lacquer finishing system.

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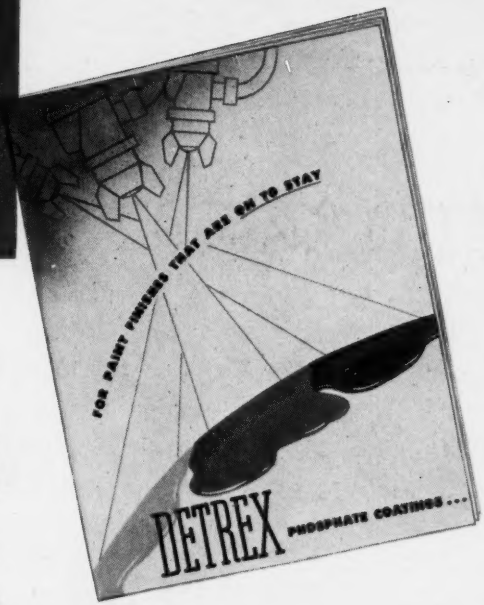

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